

AWARD NUMBER: W81XWH-14-1-0151

TITLE: Mississippi CaP HBCU Undergraduate Research Training Program

PRINCIPAL INVESTIGATOR: Christian Gomez, Ph.D.

CONTRACTING ORGANIZATION: UNIVERSITY OF MISSISSIPPI MEDICAL CENTER  
JACKSON, MS 39216-4500

REPORT DATE: September 2016

TYPE OF REPORT: Annual

PREPARED FOR: U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for Public Release;  
Distribution Unlimited

The views, opinions and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy or decision unless so designated by other documentation.

# REPORT DOCUMENTATION PAGE

*Form Approved  
OMB No. 0704-0188*

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. **PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

<b>1. REPORT DATE</b> September 2016		<b>2. REPORT TYPE</b> Annual		<b>3. DATES COVERED</b> 15 August 2015 – 14 August 2016	
<b>4. TITLE AND SUBTITLE</b> Mississippi CaP HBCU Undergraduate Research Training Program				<b>5a. CONTRACT NUMBER</b>	
				<b>5b. GRANT NUMBER</b> W81XWH-14-1-0151	
				<b>5c. PROGRAM ELEMENT NUMBER</b>	
<b>6. AUTHOR(S)</b> Christian Gomez, Ph.D.  E-Mail: crgomez@umc.edu				<b>5d. PROJECT NUMBER</b>	
				<b>5e. TASK NUMBER</b>	
				<b>5f. WORK UNIT NUMBER</b>	
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b>  UNIVERSITY OF MISSISSIPPI MEDICAL CENTER 2500 N STATE ST JACKSON MS 39216-4500				<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>	
<b>9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b>  U.S. Army Medical Research and Materiel Command Fort Detrick, Maryland 21702-5012				<b>10. SPONSOR/MONITOR'S ACRONYM(S)</b>	
				<b>11. SPONSOR/MONITOR'S REPORT NUMBER(S)</b>	
<b>12. DISTRIBUTION / AVAILABILITY STATEMENT</b>  Approved for Public Release; Distribution Unlimited					
<b>13. SUPPLEMENTARY NOTES</b> N/A					
<b>14. ABSTRACT</b> The goal of the "Mississippi prostate cancer HBCU Undergraduate Research Training Program" is to promote interest in careers in PCa research and care among undergraduate students from Tougaloo College (TC) and Jackson State University (JSU) at the University of Mississippi Medical Center (UMMC)-Cancer Institute (CI). During the summer of 2016, 2 undergraduate scholars from TC and JSU, gained experience in performing PCa research at UMMC-CI. This number added to trainees from Classes of 2014 and 2015 makes a total of 14 trainees for this training grant. Two (2) trainees are pursuing graduate studies in cancer biology; 2 trainees joined other higher education in Health Sciences related programs; 2 trainees are hired employees; 8 trainees are currently pursuing graduation; 14 meeting presentations in the poster or oral format included work related to internships; trainees received numerous (7) awards; manuscripts (4) in preparation include trainees as coauthors; and 1 PCa Research Mini Symposia have been organized. Research projects are leading to development of novel effective treatments and addressing mechanisms of resistance for men with high-risk or metastatic PCa. Likewise, these projects will eventually help distinguishing aggressive from indolent disease in men newly diagnosed with PCa. Scholars of this Program are becoming well-rounded, trained professionals with interest in PCa research and healthcare.					
<b>15. SUBJECT TERMS</b> UMMC-HBCU, Prostate Cancer, Training Grant, University of Mississippi Medical Center, Cancer Institute, Tougaloo College, Jackson State University, CDMRP, PCRP, research, care					
<b>16. SECURITY CLASSIFICATION OF:</b> Unclassified			<b>17. LIMITATION OF ABSTRACT</b>  Unclassified	<b>18. NUMBER OF PAGES</b>  64	<b>19a. NAME OF RESPONSIBLE PERSON</b> USAMRMC
a. REPORT	b. ABSTRACT	c. THIS PAGE			<b>19b. TELEPHONE NUMBER (include area code)</b>
Unclassified	Unclassified	Unclassified			

## **Table of Contents**

	<u>Page</u>
1. Introduction.....	1
2. Keywords.....	2
3. Accomplishments.....	3
4. Impact.....	13
5. Changes/Problems.....	14
6. Products.....	14
7. Appendices.....	16

## **Annual Summary**

### **1. Introduction**

Mississippi has the second highest rate of PCa death in the country and the fourth highest incidence rate. Factors such as increased risk for African-Americans, obesity and medical distrust contribute to high rates of PCa in Mississippi. The scarcity of minority physicians and scientists is a major factor in perpetuating distrust in medicine and science among minority communities. Because of these reasons the scope of our program is to increase the number of HBCU scientists and physicians who are trained as PCa researchers. The subject is to train undergraduate students from two Historically Black Colleges and Universities, Tougaloo College (TC) and Jackson State University (JSU), so they can gain experience in performing prostate cancer (PCa) research at the University of Mississippi Medical Center (UMMC) Cancer Institute (CI). Participants will participate in a 10-week comprehensive training program in PCa research and care. Interns will perform hands on PCa research, attend regular hosting lab meetings, weekly one-on-one meetings with their mentors, attend UMMC-CI's weekly seminar series, participate in a lecture program including PCa-related lectures, shadow a physician to expose them to experiences related to PCa clinical practice, participate in a PCa Research Symposium, attend seminar series about the research programs at UMMC, postgraduate studies alternatives, graduate school application process, and will be provided opportunities in social settings to improve their networking and communication skills. Interns will also prepare a final written report. Diverse ways of tracking interns will be utilized in order to contact them, update their biographical and training information, as well as their accomplishments, awards, interest and achievements related to their approach to academic career (i.e., enter graduate school, medical school or other related health-related professions contributing to PCa research and care). Our ultimate purpose is to create a long-term partnership between TC, JSU and UMMC-CI that will produce a cadre of top-caliber minority scientists and physicians with a specific interest in PCa research, prevention, diagnosis and care.

## **2. Keywords**

UMMC-HBCU, Prostate Cancer, Training Grant, University of Mississippi Medical Center, Cancer Institute, Tougaloo College, Jackson State University, CDMRP, PCRP, research, care, aggressive, indolent, disease, newly diagnosed.

### **3. Accomplishments**

***Major goals of the project [as stated in the approved Statement of Work (SOW)]:***

**Specific Aim 1:** To, during a 2-year period, recruit 6 undergraduate trainees per year from TC and JSU.

**Specific Aim 2:** To provide the mentees a comprehensive training curriculum in PCa research at UMMC-CI.

**Specific Aim 3:** To track and coach trainees on their progress towards become biomedical Prostate Cancer researchers

***What was accomplished under these goals:***

Upon completion of the second year of the project (8/2015 – 8/2016), we have trained 14 undergraduate students from TC and JSU. There were no technical or unexpected difficulties encountered and/or any deviations from the original SOW. Per Instruction, our training and research accomplishments following each task outlined in the approved SOW are listed as follows:

**Specific Aim 1: To, during a 2-year period, recruit 6 undergraduate trainees per year from TC and JSU. Year 1, months 1-3; Year 2, months 13-15 (completed)**

***Selection process:*** The applicant pool included all sophomores and juniors enrolled in a Major in the life sciences (biology, biochemistry, chemistry, biotechnology, etc.) at TC or JSU. We also included in the selection pool seniors based on their commitment to go to Graduate School (applying or accepted in a graduate program at the time of application to our program). Our strategy of advertisement included online advertisement in the research-related section and Summer Internships and Outreach Programs in the HBCUs, UMMC-CI, UMMC-discovery U Program, and UMMC-School of Graduate Studies in the Health Sciences webpages. We also developed a webpage (<http://www.umc.edu/researchtraining/>). This resource has continued been particularly successful since includes information about eligibility requirements, program components, summer research internship, housing assistance, application packet, and contact information, list of mentors, and news (**Appendix #1**). In addition, Flyers were placed in the two colleges and at the host institution (**Appendix #2**). The selection process was initiated 60 days prior to the beginning of the summer training course.

The following tables refer to some demographics aspects related to the applicant pool for the class of 2016 which included 2 students selected (1 from JSU and 1 from TC). This surpasses our goal of training 12 students. Total of trainees are now 14. Follows demographics for Class of 2016:

<b>Applicant numbers</b>	<b>2016</b>
JSU	7
TC	4
<b>Gender (overall)</b>	
Female	9
Male	2

<b>Gender (TC)</b>	<b>2016</b>
Female	2
Male	2
<b>Gender (JSU)</b>	
Female	7
Male	0

It is also worth noting that independent of the school, and as noted in our previous report, females leaded the number of applicants to our program. Overall, females represented 81.8% of the pool of applicants to class of 2016. Males represented 18.2% of the pool of applicants to class of 2016. The distribution was similar at the level of individual schools (note tables above). As we progress on the development of our program, we continue our efforts to promote inclusion of males in our program.

A question related to the academic status of applicants applying to our program is of great importance to assess the nature of the pool and its distinct component when analyzing per school.

The following tables represent the average GPA for the whole pool as well as per each individual school:

<b>GPA (average)</b>	<b>2016</b>
TC	3.45
JSU	3.64

<b>GPA (TC)</b>	<b>2016</b>
Average	3.45
Standard deviation	0.41
Median	3.42

<b>GPA (JSU)</b>	<b>2016</b>
Average	3.62
Standard deviation	0.26
Median	3.64

From the GPA results, a good representation of academic performance, we can propose that the application pool remains homogeneous (compared to our previous report) between schools. This statement however, needs further validation since the standards between schools for evaluation have not been normalized at the present.

Following the selection process, 2 trainees were selected for the Class of 2016. Individual digitalized application packages and a well-defined set of scoring criteria was distributed to a set of five raters. Those included PI, member of Program Advisory Board, a research mentor, HBCU faculty advisors, and Program Coordinator. Applicants were ranked by highest to lowest based on the GPA, Personal statement and Letters of reference.

Follows the list of applicants selected for the Class of 2016:

Name	School	Classification	Major	GPA
Courtney Mangum	TC	Junior	Biology	3.77
Ornella Amoah	JSU	Sophomore	Chemistry	3.79

***Match the student fellows with their research mentors at UMMC-CI. Year 1, months 4-5; Year 2, months 16-17 (completed for Years 1 and 2)***

As planned, trainees were matched to mentors based on the mentee's research interests and following an interview between the mentee and potential mentor. Mentor assignations were completed 30 days prior to the initiation of the summer program. Use of the web-based resource (<http://www.umc.edu/researchtraining/>) allowed mentees to identify mentors based on research interests. Typically, the trainees selected three mentors and ranked them by order of preference. Interviews followed (including the presence of the Program Director) and a decision about the selected mentor was taken consulting the option of the mentee and prospective mentors.

**Specific Aim 2: To provide the mentees a comprehensive training curriculum in Prostate Cancer research at UMMC-CI (completed)**

***Summer course:***

The trainees participated in a 10-week comprehensive training program in PCa research and care. As outlined (**Appendix #3**), the Course Program was completed as anticipated.

The following description refers to landmarks achieved during the Summer Training Course:

***PCa-specific lecture program:*** Included lectures were focused on Basic Cancer Biology; Cancer Pathology Pharmacology; Clinical science; Population Science; and Careers in PCa Research and Care.

***Summer research project:*** The mentees were associated to a primary mentor. They developed their research project under direct supervision of a graduate student or postdoc.

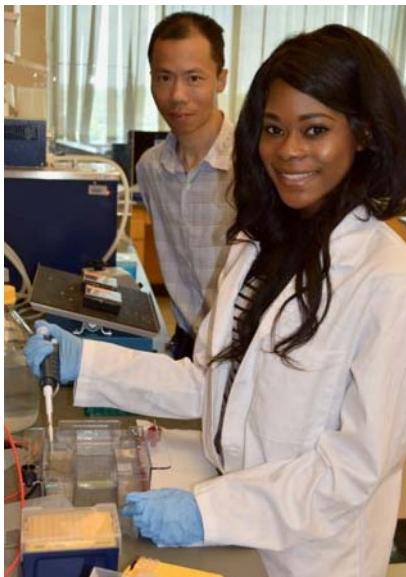
The following table resumes mentors and mentees for the Classes of 2016:

Mentee	School	Mentor	Project Title
<b><i>Class of 2016</i></b>			
Courtney Mangum	TC	Keli Xu	Identifying Progression of Aggressive Prostate Cancer Originating from Lunatic Fringe/Notch-Regulated Mice Models
Ornella Amoah	JSU	Christian Gomez	Effects of Hypoxia on the Aggressiveness of PCa

Students attended regular hosting lab meetings, and met weekly with their mentors. These one-on-one meetings were highly valuable to discuss the progress of the research projects. For the

inaugural course, once a week, the students visited another lab involved in PCa research; in these occasions they interacted with other PIs and lab personnel. It was intended that this activity would give the students a broader vision of the PCa research done at the Cancer Institute.

The following picture shows aspects of the wet lab centric summer research program:



***The Summer Training Program is centered on a mentored hands-on a research intensive project (Courtney Mangum with her mentor Dr. Keli Xu, Ph.D. on the left and Ornella Amoah with the graduate student Nasir Butt, M.D.)***

**Shadowing:** To expose mentees to experiences related to PCa clinical practice, they shadowed clinicians. See **Appendix #3** for list of clinical mentors involved in the shadowing activities. This activity, occurred once a week (between weeks 4-6) and included touring to Urology, Hematology-Oncology, and Radiation Oncology facilities. Shadowing exposed the mentees to the challenges related to research and care of PCa patients.



*Scenarios for multi-disciplinary patient assessment were presented to students  
(Mentees attend a tumor teleconference focused on Vice-President Biden  
“Cancer Moonshot Initiative”)*

**End of the Summer 2016 PCa Research Symposium:** This activity has become a keystone of our program. The program has attracted the attention of the UMMC community at large, along with that from local academic institutions. Forty four (44) attendants registered for the conference (**Appendix #4:** Sign-up sheet for 2016 PCa Research mini-Symposium). Speakers (**Appendix #5;** Program for the 2016 Research Conference) (10), included: Srinivasan Vijayakumar, Director of UMMC-Cancer Institute, Professor and Chairman, Department of Radiation Oncology University of Mississippi Medical Center, "Precision Medicine and Its Role in Overcoming Disparities in Health Care in Mississippi"; Keli Xu, Ph.D., Assistant Professor of Neurobiology and Anatomical Sciences, member of the Cancer Institute at University of Mississippi Medical Center, "Potential Roles of Lunatic Fringe and Notch in Aggressive Prostate Cancer"; Timothy Turner, Ph.D., Professor and Chairman Department of Biology, Jackson State University, "Targeted Treatment of Prostate Cancer"; Nasir Butt, Ph.D. Candidate, Department of Pathology, UMMC, "Novel Therapeutic Strategy using Dietary Bioactive Compound for Prostate Cancer"; Marcelo Sakiyama, Ph.D. Candidate, Department of Pathology, University of Mississippi Medical Center, "MHC Class I Polypeptide-Related Sequence A (MICA) as a Factor of Aggressive Prostate Cancer". Diva Whalen, B.S., Graduate Student, Meharry Medical College, UMMC – HBCU: Prostate Cancer Research Training Program Class of 2014, "The Next Step: Success After the Program"; Jinghe Mao, Ph.D., Professor of Biology, Tougaloo College, "Undergraduate Training for Biomedical Research at Tougaloo College"; and the two trainees of the UMMC-HBCU 2016 PCa Training Program: Ornella Amoah, JSU, "Effects of Hypoxia on the Aggressiveness of Prostate Cancer"; Courtney Mangum, TC, "Identifying Progression of Aggressive Prostate Cancer Originating from

Lunatic Fringe/Notch-Regulated Mice Models". The Research Mini Symposium represents a venue for the trainees to present their research project, increase their knowledge about the different research aspects of PCa, and engage themselves in productive networking activities with seasoned PCa researchers, academic leader and PCa community advocates, among others as is exhibited in **Appendix #6**.

**Summer Undergraduate Research Experience (SURE):** To maximize the mentees' summer experience, our Program has been integrated with the SURE program. This initiative oversees and promotes undergraduate outreach summer activities in biomedical research through the UMMC School of Graduate Studies in the Health Sciences. Mentees from our program interacted with top students from around the state and the country, attended to weekly seminar series (**Appendix #7**: SURE program for 2016). Students learned about the research programs at UMMC, postgraduate studies alternatives, and graduate school application process. They also were provided numerous opportunities in social settings to improve their networking and communication skills (**Appendix #7**: SURE social activities program). They presented their research projects in the oral and poster format (**Appendix #8**: Summer Undergraduate Research Symposium, 2016. Highlighted in the program are our students' names).

The following picture depict mentees engaged in activities of the SURE:



*The Summer Undergraduate Research Experience allowed our trainees to interact with top students from around the state and the country and learn about graduate school opportunities.*

*(Courtney Mangum -on the left- and Ornella Amoah -on the right- at the Summer Undergraduate Research Symposium)*

***What opportunities for training and professional development did the project provide?***

***Preparation of reportable products (i.e., scientific abstracts and manuscripts) based on the trainees' research:***

Trainees have worked and continue working in close contact with their mentors in summarizing their findings.

***Final report:*** At the end of the Summer Training Course mentees prepared a final report (**Appendix #9**). The 1-page document was structured as a scientific conference abstract. Early on, mentors and mentees were instructed to refer to a very specific format for elaboration of the document. Format requirements included extension (1-page), document type (Word file), Font (Times New Roman), Font size (12 points), Space (single), Margins (1.25"). Structure was also specified (Title, Authors, Affiliations, Body: Including introduction, main objective or hypothesis, materials and methods, main results, discussion and future directions), and Funding sources: (i.e., grant/s from PI, DoD: W81XWH-14-1-0151).

***Student presentations:*** Class 2016 interns presented their research in the poster and/or oral format. So far 7 (seven) meeting presentations in the poster or oral format included work related to our 2 trainees. Trainees presented their work in local meetings, at 2016 UMMC PCa Research Mini Symposiums (**Appendices #5 and #6**), 2016 Summer Undergraduate Research Symposiums (**Appendix #7**), and TC Research Day (**Appendix #10**).

***Manuscripts in preparation (4):*** Anthony Keyes, the process of writing a publication from the work he did during the summer of 2016 (Class of 2014). Joshua Agee (Class of 2014) and Timera Brown (Class of 2015) will be coauthors in a manuscript from Drs. Mao and Zhou (mentors). Angel Garcia (Class of 2015) will be coauthor in an article from Dr. Gomez (PI) lab. Adesuwa Ekunwe (Class of 2015) is actively working with Dr. Anait Levenson in the preparation of a manuscript including her as coauthor. In recognition of the relevance of publications for the success of this program, the leadership continue actively engaging mentors and mentees in the preparation of manuscripts. For this purpose, active mentee-mentor communication modalities have implemented. To stimulate students' continued work, they will offered part time opportunities in the host laboratories at UMMC. To formalize this process, they will be offered an academic credit-conducing Independent Study Course co-mentored by the research mentor at UMMC-CI and the faculty advisor at the HBCU. This extended mentoring mechanism has been implemented and is offered to the students.

**Specific Aim 3: To track and coach trainees on their progress towards become biomedical Prostate Cancer researchers**

There are different modalities to track trainees and support them. Some of them are based at the HBCUs and others are based at UMMC. The mentors and mentees maintain periodical communication. Additional constant communication occurs between Undergraduate Faculty Advisors at HBCU and mentees for evaluating academic performance and willingness to pursue

graduate studies. As indicated above, the Program Director has worked closely with mentors and HBCU advisors to work on modalities to sustain communication with the mentees and achievement of program success indicators. Faculty advisors at the HBCUs have worked with the trainees in promoting their academic progress preparing them for graduate school.

To exemplify our progress on supporting our fourteen (14) trainees in their path to pursuing PCa careers we exhibit some relevant landmarks:

***Our Trainees have received numerous (7) awards.*** Class of 2014- Anthony Keyes: Poster presentation award at ABRCMS 2015 in Seattle, WA; Research Experience for Undergraduates Summer Program at University of Illinois at Urbana-Champaign (Summer 2015); 2016 iREU (international Research Experiences for Undergraduates) at University of Bordeaux, France. Class of 2015- Angel Garcia: NSD Research Symposium 2015 poster presentation award and second place poster award at Mississippi College Undergraduate Research Symposium, Tougaloo College; iSEED Summer Research Experience at the University at Buffalo. Jamal Keyes: 2016 Summer Research experience for undergraduates, RISE (Research in Science and Engineering) at Rutgers. Timera Brown: 2016 Research experience for undergraduates at Vanderbilt Institute for Nanoscale Science and Engineering. (**Appendix #11: Trainees Awards**)

***Two (2) trainees are pursuing graduate studies in cancer biology:*** Diva Whalen (Class of 2014) finished her first year at Meharry Medical College to attain a Ph.D. Charles Phillips (Class of 2015) was accepted at the School of Graduate Studies in the Health Sciences, Graduate Program in Pathology, UMMC to attain a Ph.D. (**Appendix #12**)

***Two (2) trainees joined other higher education in Health Sciences related programs:*** Ansley Scoot (Class of 2014) was accepted at the University of Arkansas for Medical Sciences College of Medicine (**Appendix #13**). Tatyana Givens (Class of 2014) was accepted into Mercer's Doctor of Pharmacy Class of 2020 at Mercer University (**Appendix #14**).

***Attendance and presentation at Scientific Meetings (14):*** Class of 2014- Anthony Keyes poster presentation at ABRCMS 2015 in Seattle, WA. Diva Whalen, invited speaker at 2016 Prostate Cancer Research Mini Symposium, UMMC. Class of 2015- Angel Garcia: Poster presentation at 2015 14<sup>th</sup> Research Symposium of Students' Summer Research Series and 2016 Mississippi College Undergraduate Research Symposium at Tougaloo College; 2016 Emerging Researchers National (ERN) Conference in Science, Technology, Engineering and Mathematics (STEM). Washington, D.C. Adesuwa Ekunwe: Poster presentation at ABRCMS 2015, Seattle, WA. Charles Phillips: poster presentation at 2015 TC 14<sup>th</sup> Research Symposium of Students' Summer Research Series. Timera Brown: oral presentation at 2015 TC 14<sup>th</sup> Research Symposium of Students' Summer Research Series. Class of 2016- Courtney Mangum: oral presentation at 2016 Prostate Cancer Research Mini Symposium at UMMC; poster and oral presentation at 2016 Summer Undergraduate Research Symposium at UMMC. Ornella Amoah: oral presentation at 2016 Prostate Cancer Research Mini Symposium at UMMC; poster and oral presentation at 2016 Summer Undergraduate Research Symposium at UMMC. (**Appendices #5, #10, #11 and #15**)

Diverse modalities for trainees tracking have been implemented. They have been used to prepare this Annual report:

**Trainees' database:** We implemented a database to register trainee's contact, biographical and training information, accomplishments such as fellowships, awards, employment, education, publications, funding received, and poster and oral presentations at scientific conferences, etc. Recently, an electronic Redcap-based survey helps us to compile information for population and update of our database. This work is diligently performed by Mr. Marcelo Sakiyama, program assistant. Our most recent summary update based on the information archived in the database refers to the academic progress of trainees:

**14 undergraduate scholars** from TC and JSU, gained experience in performing PCa research at UMMC-CI. **Two (2) trainees are pursuing graduate studies in cancer biology.** Diva Whalen (Class of 2014) is entering her second year at Meharry Medical College to attain a Ph.D. degree. Charles Phillips (Class of 2015) joined the School of Graduate Studies in Health Sciences, Department of Pathology, at UMMC. **Two (2) trainees joined other higher education in Health Sciences related programs:** Ansley Scoot (Class of 2014) was accepted at the University of Arkansas for Medical Sciences, College of Medicine and Tatyana Givens (Class of 2014) was accepted into Mercer's Doctor of Pharmacy at Mercer University. **Two (2) trainees are hired employees:** Joshua Agee is a researcher coordinator at Open Arms Healthcare Center, UMMC. Brittany Martin is working as an optician at Wallace Optometry Associates and plans to attend The University of Alabama Birmingham School of Optometry in the Fall of 2017.

**Eight (8) trainees are currently pursuing graduation:** Class of 2014: Anthony Keyes, senior in Chemistry and Mathematics at JSU. Class of 2015: Adesuwa Ekunwe, is a Rising Junior in Chemistry at JSU. Angel Garcia, is a Rising Senior in Biology at TC. Deion Phillips, is a Rising Senior in Biology at JSU. Jamal Keyes, is a Rising Junior in Chemistry at JSU. Timera Brown, is a Rising Junior in Biology at TC. Class of 2016: Courtney Mangum, is a senior biology major at TC, Vice-President of the National Pre-Alumni Council of the United Negro Fund. Ornella Amoah is a junior Chemistry major at The JSU, NOBCChE JSU student chapter secretary and the ACS JSU chapter vice president. The Program Director, in conjunction with the faculty advisors, and assisted by Mr. Sakiyama maintains and updates the database of all information collected.

*How were the results disseminated to communities of interest?*

As dissemination modalities we used Facebook and LinkedIn. Those resources have been used by our trainees as means to obtain continuous tracking, promote engagement, interaction and professional networking, help professional work's dissemination, and develop professional presence. Social media additionally, has been used as a tool to educate the public about trainees' experience in the Program and as a way to increase public awareness of PCa research performed by minorities.

The following pictures exemplify use of social media as means of mentee tracking and program dissemination:

**Jamal Keyes**  
Research Intern at University of Mississippi Medical Center  
Colorado Springs, Colorado Area | Biotechnology

Previous Education: Rutgers University, Jackson State University, United States Air Force, Jackson State University

[Send Jamal InMail](#)

24 connections

<https://www.linkedin.com/in/jamal-keyes-894b21ba>

**Background**

**Summary**

A current student who is interested in pursuing an MD-PhD degree program following graduation with a primary interest in the study of drug delivery systems.

**Experience**

**Research Intern**  
University of Mississippi Medical Center  
June 2015 – Present (1 year 4 months) | United States

Development and synthesis of a cell-penetrating peptide (CPP) and therapeutic peptide (TP) conjugated elastin-like polypeptide (ELP) drug delivery system for cancer models.

**Summer Research Intern**  
Rutgers University  
May 2016 – August 2016 (4 months) | United States

The development and characterization of polyelectrolyte polymer-peptide nanoplexes for antimicrobial applications.

***Trainees are instructed to develop their professional social profile  
(Jamal Keyes - Class of 2015- most current LinkedIn update. 09/28/2016)***



***Social media allows outreach and Program dissemination  
(Speakers, 2016 PCa Research Symposium in the UMMC-Cancer Institute Facebook group page)***

**Plans to accomplish the proposed goals:** With focus on the next report, Program leadership is focused on the following aspects:

- Continuous mentee-mentor interaction. For this purpose trainees are currently being offered the academic credit-conducting Independent Study Course co-mentored by the research mentor at UMMC-CI and the faculty advisor at the HBCU.
- Meeting presentations. Our goal will be to support trainees on the submission of abstracts to local and national meetings.
- Manuscripts. As indicated, at least publications may have mentees as coauthors. The leadership team will make special emphasis on the achievement of this goal.
- Application to graduate school programs. So far, student from the inaugural Class, and one from the Class of 2015 were accepted to graduate school programs with emphasis in cancer biology and pathology. Other 2 (Class of 2014) are in higher education in health sciences related programs. Many of the trainees remaining as undergraduates will be in position to apply to graduate programs during this academic year. We are closely working with them on their application process.

#### **4. IMPACT**

***Development of the principal discipline(s) of the project:*** Since UMMC-CI faculty members are engaged in a variety of research projects, trainees have had the opportunity to be trained in different areas of PCa research. Particularly the trainees have been involved in mechanisms of tumorigenesis. The results generated will allow advancement on new therapeutic strategies for men with aggressive disease. Since our researchers also have interest in Biomarker development and validation, projects will help to distinguish aggressive from indolent disease in men newly diagnosed with PCa.

One of the most relevant aspects is the training of our students in relation to achieve superior level so of PCa knowledge. In 2016, a questionnaire was applied to specifically assessment of proposed goals. An unannounced pre (before first lecture) - vs. post (after the last lecture)-evaluation test evaluated the impact of the lectures program on the trainees' knowledge about PCa. Overall, see **Appendix #16** for test results, the students exhibited a doubling of their knowledge score (average pre-training score was 30.5% correct; average post-training score was 67.5% correct). Despite the small number of questions and students, one can draw a few clear observations. Before the class, none of the students had any knowledge of FDA-approved PCa biomarkers. By the time the training ended, every student knew the correct answer. Tests such as this objectively demonstrate the achievements of our training program.

***Other disciplines:*** Another area of interest the work the trainees is relevant for development of effective treatments and address of mechanisms of resistance for men with high-risk or metastatic PCa.

***Technology transfer:*** It has been a tremendous impact of this project in allowing resource sharing between the UMMC campus and the HBCUs. UMMC, being the only academic research center in the state of Mississippi, has a unique capital of technology resources. The HBCUs have taken advantage of those resources as means to increase the value of their research programs in cancer biology, particularly PCa. As examples, many of the projects trainees have been involved utilized

patient-derived materials and associated data, novel therapeutic models, agents or devices designed by UMMC researchers. As some students develop research at their HBCUs through the academic year, they have taken knowledge and some of those resources to their schools.

**Society beyond science and technology:** The first ones impacted by our project have been our own trainees. They have become aware of the particularities of PCa for their own communities. As a result of that (**Appendix #17** Class of 2016 Students testimonials), they have grown fonder of biomedical cancer research and have embraced the scientific career as a professional option. The Mississippi PCa HBCU Undergraduate Research Training Program is the first and only one in the state designed to provide undergraduate minority student training in PCa research at a research intensive environment. This Training Program has empowered HBCU undergraduates to pursue PCa careers, it has generated a pipeline for undergraduate research in PCa in Mississippi. Trainees of our program are becoming well-rounded professionals with training to thrive in PCa biomedical research, prevention, diagnosis and care. In the near future former mentees, as junior faculty will enlarge the ranks of minority researchers at TC, JSU or UMMC. They will impact their communities and will contribute to reduce PCa health disparities.

The UMMC community is very diverse and has interest in numerous disciplines of academic biomedical knowledge. Our program has generated a vibrant environment for interest in PCa research. This has been reflected in the overwhelmingly positive interest to our Prostate Cancer Research Mini Symposium. As noted by the attendance to this activity (**Appendices #4: Signup sheets**) we continue attracting a diverse crowd. We have attracted not only researchers. To our activities, numerous clinicians, institutional and community leaders have attended. They have learned not only about basic and translational PCa cancer research with focus on disparities. They have also received a not complicated message on disease outcomes and behavioral intervention. Also community leaders and lay community members, attended to our activities this year. We are sure they will transmit our message to their communities.

## **5. CHANGES/PROBLEMS:**

There are no problems to report.

There are no other changes or problems to report.

## **6. PRODUCTS:** List any products resulting from the project during the reporting period.

**Presentations:** Fourteen (14) meeting presentations in the poster or oral format included work related to internships during the current report period. Trainees presented their work in local (11) and national (3) meetings such as the 2015 14<sup>th</sup> Research Symposium on Students' Summer Research Series at Tougaloo College (**Appendices #5 and #7**); 2016 Mississippi College Undergraduate Research Symposium at Tougaloo College; 2016 Prostate Cancer Research Mini Symposium and 2016 Summer Undergraduate Research Symposium, both at UMMC; 2015 ABRCMS in Seattle, WA; 2016 Emerging Researchers National (ERN) Conference in Science, Technology, Engineering and Mathematics (STEM). Washington, D.C.

## **Website(s) or other Internet site(s):**

Course webpage: <http://www.cancer.org/cancer/prostatecancer/detailedguide/prostate-cancer-key-statistics>

The webpage informs prospective applicants about eligibility requirements, Program components, Summer Research internship, housing assistance, application packet, contact information and news (**Appendix#1**; for the Course webpage screenshot).

We have generated two social media resources. (**Appendix # 18** for social media resources screen shoots).

The Facebook group: <https://www.facebook.com/groups/675020649225547/>

The LinkedIn group: <https://www.linkedin.com/grp/home?gid=6660607>

Periodically, the UMMC-Cancer Institute Facebook is reporting on our Program:  
<https://www.facebook.com/The-Cancer-Institute-at-UMMC-485738241532013/>

These 4 resources provide powerful tools to obtain continuous tracking, promote engagement, interaction and professional networking, helping professional work' dissemination; and supporting developing of professional presence. Additionally, the social media resources are used as tools to educate the public about trainees' experience in the Program and as a way to increase public awareness of PCa research performed by minorities.

Educational aids or curricula: The development of the summer training course demanded an intensive curriculum. For details about the course program refer to **Appendix #3**.

## 7. APPENDIXES

### Appendix #1: UMMC WEBPAGE

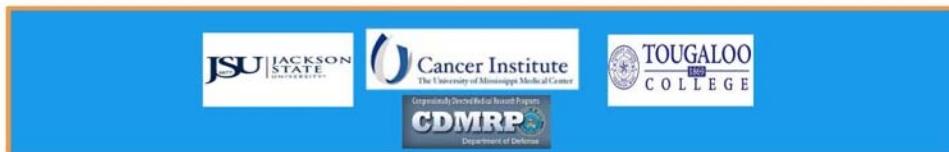
The screenshot shows the UMMC Cancer Institute website. At the top, there is a navigation bar with links for Welcome, UMMC Home, About UMMC, Education, Health Care, Research, Administration, Library, and Giving. There is also a search bar and social media icons. Below the navigation bar, a breadcrumb trail shows the current page is 'Administration > Centers and Institutes > Cancer Institute'. A main content area features a photograph of a group of six people, identified as the 'HBCU Class of 2016'. Below the photo, a section titled 'Mississippi Prostate Cancer HBCU Undergraduate Research Training Program' provides details about the program, mentioning the third HBCU Prostate Cancer Research Training Program completed their 10-week summer internship by making presentations at the 2016 Prostate Cancer Research Mini Symposium. The students, from Jackson State University and Tougaloo College, with UMMC representatives, are from left, Dr. Timothy Turner, Jackson State University professor and chairman, Department of Biology; Ornella Amoah, JSU student and HBCU participant; Courtney Mangum, Tougaloo College student and HBCU participant; Diva Whalen, HBCU alum and Meharry Medical College graduate student; Dr. Jinghe Mao, Tougaloo College professor and chairman, Department of Biology; Dr. Christian Gomez, UMMC associate professor of pathology and radiation oncology and Cancer Institute's HBCU program advisor; Dr. Keli Xu, UMMC assistant professor of neurobiology and anatomical sciences and Cancer Institute member.

**CANCER INSTITUTE**

- ▶ Cancer Institute Home
- ▶ About Us
- ▶ Cancer Research and Registry
- ▶ Cancer Research
- ▶ Clinical Trials
- ▶ Contact Us
- ▶ Donors
- ▶ Education and Training
  - ▶ 70x2020 Initiative
- ▶ **Research Training Program**
- ▶ School of Dentistry
- ▶ School of Graduate Studies
- ▶ School of Health Related Professions
- ▶ School of Medicine
- ▶ School of Nursing
- ▶ School of Pharmacy
- ▶ Faculty
- ▶ Locations
- ▶ News
- ▶ Upcoming Events

Connect with UMMC - HBCU: Prostate Cancer Research Training on Facebook and LinkedIn.  
Supported by the U.S. Department of Defense Prostate Cancer Research Program  
Our goal is to train undergraduate students from two Historically Black Colleges and Universities. Tougaloo

## Appendix #2: Program flyer



### 2016 Mississippi Prostate Cancer HBCU Undergraduate Research Training Program

Summer Experience in Cancer Health Disparities  
at the University of Mississippi-Cancer Institute

Supported by the U.S. Department of Defense Prostate Cancer Research Program

**Purpose:** To train undergraduate students from Tougaloo College and Jackson State University so they can gain experience in performing prostate cancer research at the University of Mississippi Medical Center (UMMC)-Cancer Institute.

**Duration:** May 31, 2016 – August 5, 2016

**Description:** Students will participate in a 10-week comprehensive training program in Prostate Cancer research and care, perform hands on research, attend regular hosting lab meetings and a weekly one-on-one meeting with their mentors, attend research seminar series and lectures focused on prostate cancer, shadow clinicians, participate in a prostate cancer research symposium and prepare a final written report. Trainees will be involved in campus wide activities with undergraduates from other summer programs, learn about research programs at UMMC, postgraduate studies alternatives, graduate school application process, and will be provided opportunities in social settings to improve their networking and communication skills.

**Financial:** Successful applicants will receive a \$6,000 stipend.

**Eligibility:** Applicants must be U.S. citizens, permanent residents or legal aliens who are pursuing a major in the life sciences, sophomores or junior standing for the upcoming fall semester, have successfully completed one semester of math and one year of sciences (biology, chemistry or physics), science grade point average of at least 3.0 at the time of submission, and have the intention of pursuing a Ph.D. after graduation.

**Application package (available at [www.umc.edu/researchtraining](http://www.umc.edu/researchtraining)):**

1. Complete Mississippi Prostate Cancer HBCU Undergraduate Research Training Program application form
2. A written personal statement
3. Provide resume
4. Provide two letters of recommendation (one of which is completed by a STEM instructor)
5. Official transcripts of undergraduate grades

**Deadline:** March 28, 2016, 5PM CT

**Notification:** On or before May 1, 2016

**Information:** ([www.umc.edu/researchtraining](http://www.umc.edu/researchtraining))

Veronica Mayes UMMC Cancer Institute 2500 North State Street Jackson, MS 39216 601-815-6802 (phone) 601-815-6806 (fax) <a href="mailto:vmayes@umc.edu">vmayes@umc.edu</a>	Jinghe Mao, Ph.D. Tougaloo College 500 W. County Line Rd. Tougaloo, MS 39174 601-977-4450 (phone) 601-977-7898 (fax) <a href="mailto:jmao@tougaloo.edu">jmao@tougaloo.edu</a>	Stephen I. Ekunwe, Ph.D. Jackson State University 1400 J.R. Lynch Street Jackson, MS 39217 601-979-2586 (phone) 601-979-5853 (fax) <a href="mailto:stephen.i.ekunwe@jsu.edu">stephen.i.ekunwe@jsu.edu</a>
---	---	---

## Appendix #3: Research Training Programs for 2016

### 2016 Mississippi Prostate Cancer HBCU Undergraduate Research Training Program

May 31, 2016 – August 5, 2016

#### Time table:

Time Table for Summer Program Training Plan										
	wk 1	wk 2	wk 3	wk 4	wk 5	wk 6	wk 7	wk 8	wk 9	wk 10
Lab research										
Lectures										
Clinical shadow										
Presentation										

#### Research Mentors:

Mentor	Research specialty	Teaching	Department
Gene Bidwell, Ph.D.	Targeted drug delivery	Biochem, Mol Onc	Neurology and Biochemistry
Christian Gomez, Ph.D.	Tumor microenvironment in PCa	Mol Onc, Biochem	Pathology Cancer Institute
Wael M. ElShamy, Ph.D.	Cell signaling in cancer	Mol Onc	Radiation Oncology, Cancer Institute
Joseph Maher , M.D.	Cell-fate determination in development and oncogenesis	Mol Onc	Medicine, Cancer Institute
Yin-Yuan Mo, Ph.D.	Non-coding RNA in PCa and breast cancer	Mol Onc, Cell Bio, Microbiol	Pharmacology Cancer Institute
Radhika Pochampally, Ph.D.	MicroRNA and stem cell in PCa	Mol Onc	Biochemistry Cancer Institute
Drazen Raucher, Ph.D.	Targeted drug delivery	Mol Onc, Biochem, Res Methods in Cell Bio	Biochemistry Cancer Institute
Xeli Xu, Ph.D.	Cancer stem cells	Mol Onc	Neurobiology & Anatomical Sciences Cancer Institute
Xinchun Zhou, M.D., Ph.D.	Lipogenesis and marker discovery in PCa	Epidem, Infect Dis	Pathology Cancer Institute

**Faculty Advisors:**

<b>Advisor</b>	<b>Institution</b>	<b>Department</b>
Jinghe Mao, Ph.D., Professor	Tougaloo College	Biology
Stephen I. N. Ekunwe, Ph.D., Professor	Jackson State University	Biology

**Internal Advisory Committee Members:**

<b>Member</b>	<b>Institution</b>	<b>Department</b>
Srinivasan Vijayakumar, M.D., Professor, Director and Chairman	University of Mississippi Medical Center	Cancer Institute Radiation Oncology
Roy J. Duhé, Ph.D., Professor, Associate Director	University of Mississippi Medical Center	Pharmacology and Toxicology Cancer Education – UMMC CI

**Lab rotations:** Half-a-day activity. Students will visit labs involved in prostate cancer research at UMMC-Cancer Institute, Tougaloo College, and Jackson State University. Students will also attend lab meetings, discuss with lab PI or manager about the general lab research focus, and shadow a postdoc or graduate student.

**Lecture program:**

**Location:** Cancer Institute Conference Room 6<sup>th</sup> floor, G-651. **Time:** Mondays 9:00 a.m. – 10:00 a.m.

Mississippi Prostate Cancer HBCU Undergraduate Research Training Program-Lecture Syllabus			
<b>Lecture</b>	<b>Date</b>	<b>Topic</b>	<b>Instructor and Organizational Affiliation</b>
1	June 6, 2016	Basic Cancer Biology	Yin-yuan Mo, Ph.D., Professor, Department of Pharmacology and Toxicology, Director, Cancer Genetics Program, UMMC – Cancer Institute
2	June 13, 2016	Prostate Cancer Biology	Avinash Kumar, Ph.D., Postdoctoral Fellow, UMMC – Cancer Institute
3	June 20, 2016	Prostate Cancer Markers	Christian Gomez, Ph.D., Associate Professor, Department of Pathology, UMMC – Cancer Institute
4	June 27, 2016	Prostate Cancer Therapeutics	Roy J. Duhé, Ph.D., Professor, Department of Pharmacology and Toxicology, Associate Director for Cancer Education, UMMC – Cancer Institute
5	July 11, 2016	Prostate Cancer Clinical Science	Satya Packianathan, M.D., Ph.D., Assistant Professor, Department of Radiation Oncology, UMMC
6	July 18, 2016	Prostate Cancer Disparities in Mississippi	Deirdre B. Rogers, M.S., C.T.R., Director, Mississippi Cancer Registry, UMMC
7	July 25, 2016	Myrlie Evers-Williams Institute for the Elimination of Health Disparities	Marino A. Bruce, Ph.D., M.S.R.C., M.Div., C.R.C., Science Director, Myrlie Evers-Williams Institute for the Elimination of Health Disparities; Founding Director, Center for Health of Minority Males (C-HMM); Program Administrator, HBCU PRIDE
8	August 1, 2016	Careers in Prostate Cancer Research and Round Table	Moderator: Christian Gomez, Ph.D., UMMC Cancer Institute Panelists: Srinivasan Vijayakumar, M.D, Director, UMMC Cancer Institute; Jinghe Mao, Ph.D., Biology Department, Tougaloo College; and Stephen I. N. Ekunwe Ph.D., Biology Department, Jackson State University

**Clinical Shadow:**

**Clinical shadow (Wednesday, weeks 3, 4, and 5):** Students will shadow a clinician, resident, or staff. This activity will occur once a week and will also include touring of the PCa treatment-related facilities between 2-3 hours.

Clinical Mentors	Week	Dates	Mentor
Charles R. Pound, M.D., Professor, Department of Medicine, Chief of the Division of Urology	3	June 15, 2016	Dr. Pound
R. Darryl Hamilton, M.D., Associate Professor, Department of Medicine, Division of Hematology and Oncology;  Louis V. Puneky, M.D., Associate Professor, Department of Medicine, Division of Hematology and Oncology;  Natale Sheehan, M.D., Assistant Professor, Department of Medicine, Division of Hematology and Oncology	4	June 22, 2016	Dr. Hamilton Dr. Puneky Dr. Sheehan (8:30am-10:30am)
Srinivasan Vijayakumar, M.D., Director, Cancer Institute and Chairman of Radiation Oncology	5	June 29, 2016	Dr. Vijay

**Prostate Cancer Research Mini Symposium:** Wednesday, August 3, 2016 from 9-12 pm. The symposium will be held in the UMMC Campus. The program will include presentations by trainees, Cancer Institute PCa researchers, and invited keynote PCa researchers.

## Appendix #4: 2016 Mini Symposium Sign in Sheets

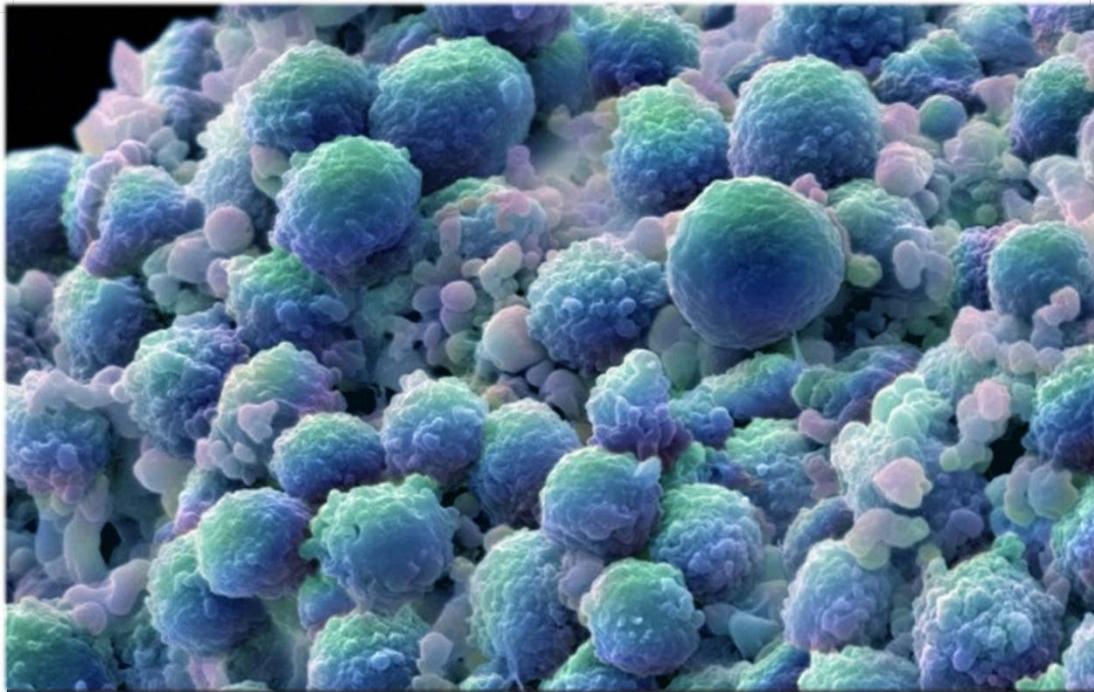
MEETING SIGN-IN SHEET			
Name	University / College / Company	Meeting Date:	Place/Room:
	E-Mail		
1. <u>Diva Whalen</u>	<u>Meharry Medical</u>	<u>dwhalen@me.com</u>	
2. <u>Cynthia Weese</u>	<u>UMMC</u>	<u>reddy2@umc.edu</u>	
3. <u>Amit Reddy</u>	<u>UMMC</u>	<u>reddy2@umc.edu</u>	
4. <u>Andrew Dugay</u>	<u>UMMC</u>	<u>reddy2@umc.edu</u>	
5. <u>S. K. Jayakumar</u>	<u>UNC CTI</u>	<u>vijayakumar2@unc.edu</u>	
6. <u>Christopher Bone</u>	<u>UNC CTI</u>	<u>crgony@unc.edu</u>	
7. <u>Amani Bailey</u>	<u>UMMC/JSU</u>	<u>abaily@umc.edu</u>	
8. <u>Kani Vijayakumar</u>	<u>UMMC</u>	<u>Vijayakumar2@umc.edu</u>	
9. <u>Tierq Phaw Chawad</u>	<u>UMMC</u>	<u>phaw@umc.edu</u>	
10. <u>Abbye Baskin</u>	<u>UMMC</u>	<u>Abbski@unc.edu</u>	
11. <u>Jugid Espinoza</u>	<u>UMMC/Cancer Inst.</u>	<u>jespinoza@umc.edu</u>	
12. <u>Ogny Amanah</u>	<u>UMMC/JSU</u>	<u>ognellaamanah@gmail.com</u>	
13. <u>Tina Turner</u>	<u>Jackson State Univ</u>	<u>tina.tunre@jsu.edu</u>	
14. <u>Shirley Shyu</u>	<u>UMC</u>	<u>Shirley@umc.edu</u>	

Name	University / College / Company	E-Mail
15. Eldren Bryant	UMC	eldren.bryant@unc.edu
16. Marcellus Sun Preyntwa	UMC / CT	m.sawyama@unc.edu
17. Jennica Mayes	UMMC / Cancer Institute	m.sawyama@unc.edu
18. Courtney Mangum	UMMC / Tongafo	courtmangum@gmail.com
19. Linda Eastham	UMMC / Ole Miss	leastham@unc.edu
20. Keli Yu	UMMC / CT	k.yu@unc.edu
21. Flavia De Carlo	UMC	fdecarlo@unc.edu
22. Roy J. Duher	UMC	RDUHE@unc.edu
23. Nasir Butt	UMMC/CT	N.Butt@unc.edu
24. Tugra Aras	Tongafo	Taras@tongafo.com
25. Pinko Palmer	UMC	rp.palmer@unc.edu
26. Gloria Gwintry	UMMC	
27. Xu Zhang	UMMC	xzhang2@unc.edu
28. Mohamed El Gassim	UMC	
29. Nazier Robert Witten	UMMC / CT	
30. Clark Hengen	j.hengen@unc.edu	

Name	University / College / Company	E-Mail
31. Sara da Palombara	Visitor	Soralapalombara@yahoo.it
32. Ying Meng	Umcu	Zhang④ umc.edu
33. Richard McIver	Tongatao	rmeigninis④tongatao.edu
34. Wan-Chang Chung	Umcu	wchang@umc.edu
35. Candelaria Diaz	Umcu	sdiez.sanchez④umc.edu
36. Yolanda Nobles	Umcu	ynobles④umc.edu
37. Yikita Whalen	Umcu	ywhalen@gmail.com
38. Willie Golding	Umcu	wgolding④umc.edu
39. Terri Whitten	Visitor	—
40. Fernando Vazquez	Umcu	—
41. Xiao Zhu	Umcu	Xzhang3④umc.edu
42.		
43.		
44.		
45.		
46.		

Name	University / College / Company	E-Mail
47. Hamza Patel	University (unmc)	hamza.g.patel@vanderbilt.edu
48. Abednego Ali Adam Commer	Tougaloo College	ali.adam@yahoo.com
49. Qasim L Whalen	Tuskegee University	qasim.whalen@gmail.com
50.		
51.		
52.		
53.		
54.		
55.		
56.		
57.		
58.		
59.		
60.		
61.		
62.		

## Appendix #5: 2016 Prostate Cancer Mini Symposium Poster and Agenda



# 2016 Prostate Cancer Research Mini Symposium

**Wednesday, August 3<sup>rd</sup>, 2016**

**9:00 a.m. until 12:30 p.m.**

**University of Mississippi Medical Center**

**Lower Amphitheater**

**Room R153**

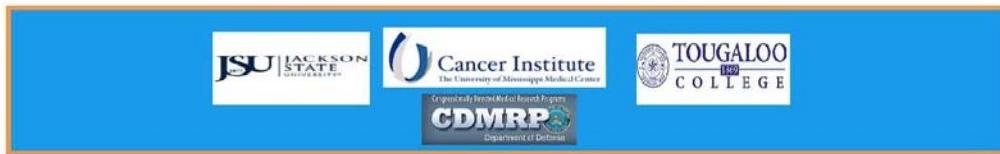
*Registration will begin at 8:30 a.m.*

More Information:

<https://www.umc.edu/researchtraining/>

Connect with UMMC - HBCU: Prostate Cancer Research Training on  
Facebook and LinkedIn





# AGENDA

## 2016 Prostate Cancer Research Mini Symposium

**Wednesday, August 3, 2016**

University of Mississippi Medical Center  
UMMC Lower Amphitheater, R153  
2500 North State Street  
Jackson, MS 39216

8:30AM – 9:00AM

**REGISTRATION**

9:00AM – 9:05AM

**WELCOME AND INTRODUCTION**

Christian Gomez, Ph.D. Principal Investigator UMMC – HBCU: Prostate Cancer Research Training Program

9:05AM – 9:35AM

**SPECIAL LECTURE**

"Precision Medicine and Its Role in Overcoming Disparities in Health Care in Mississippi"

Srinivasan Vijayakumar, Director UMMC-Cancer Institute  
Professor and Chairman, Department of Radiation Oncology  
University of Mississippi Medical Center (UMMC)

9:35AM – 9:40AM

Discussion: Christian Gomez, Ph.D.

Associate Professor of Pathology and of Radiation Oncology,  
member of the Cancer Institute Tumor Cell Biology Program,  
Program Director UMMC – HBCU: Prostate Cancer Research  
Training Program

9:40AM - 10:20AM

**Session 1: Novel therapeutics approaches for prostate cancer**

**Moderator:** Christian Gomez, Ph.D.  
Associate Professor of Pathology and of Radiation Oncology,  
member of the Cancer Institute Tumor Cell Biology Program,  
Program Director UMMC – HBCU: Prostate Cancer Research  
Training Program

9:40AM – 9:55AM	<b>"Potential Roles of Lunatic Fringe and Notch in Aggressive Prostate Cancer"</b> Keli Xu, Ph.D. Assistant Professor of Neurobiology and of Anatomical Sciences, member of the Cancer Institute Tumor Cell Biology Program
9:55AM – 10:00AM	Discussion
10:00AM – 10:15AM	<b>"Targeted Treatment of Prostate Cancer"</b> Timothy Turner, Ph.D. Professor and Chairman Department of Biology, Jackson State University
10:15AM – 10:20AM	Discussion
10:20AM – 10:30AM	<b><u>COFFEE BREAK</u></b>
10:30AM – 11:25PM	<b><u>Session 2: Career Development</u></b>
10:30AM – 10:45AM	<b>"Novel Therapeutic Strategy using Dietary Bioactive Compound for Prostate Cancer"</b> Nasir Butt, Ph.D. Candidate. Co-mentors: Christian Gomez, Ph.D., Associate Professor of Pathology and of Radiation Oncology, member of the Cancer Institute Tumor Cell Biology Program, Program Director UMMC – HBCU: Prostate Cancer Research Training Program; Anait Levenson, M.D., Ph.D., Professor of Cancer Research and Pharmacology. Associate Dean for Research and Graduate Studies, Arnold & Marie Schwartz College of Pharmacy and Health Sciences, Long Island University – Brooklyn
10:45AM – 10:50AM	Discussion

10:50AM – 11:05AM	<b>“MHC Class I Polypeptide-Related Sequence A (MICA) as a Factor of Aggressive Prostate Cancer”</b> Marcelo Sakiyama, Ph.D. Candidate. Mentor: Christian Gomez, Ph.D., Associate Professor of Pathology and of Radiation Oncology, member of the Cancer Institute Tumor Cell Biology Program, Program Director UMMC – HBCU: Prostate Cancer Research Training Program
11:05AM – 11:10AM	Discussion
11:10AM – 11:15AM	<b>“Identifying Progression of Aggressive Prostate Cancer Originating from Lunatic Fringe/Notch-Regulated Mice Models”</b> Courtney Mangum, UMMC – HBCU: Prostate Cancer Research Training Program student. Tougaloo College. Mentor: Keli Xu, Ph.D. Assistant Professor of Neurobiology and of Anatomical Sciences, member of the Cancer Institute Tumor Cell Biology Program
11:15AM – 11:17AM	Discussion
11:17AM – 11:22AM	<b>“Effects of Hypoxia on the Aggressiveness of Prostate Cancer”</b> Ornella Amoah, UMMC – HBCU: Prostate Cancer Research Training Program student. Jackson State University. Mentor: Christian Gomez, Ph.D., Associate Professor of Pathology and of Radiation Oncology, member of the Cancer Institute Tumor Cell Biology Program, Program Director UMMC – HBCU: Prostate Cancer Research Training Program
11:22AM – 11:24AM	Discussion
11:25AM – 11:40AM	<p style="text-align: center;"><b><u>SPECIAL LECTURE</u></b></p> <p style="text-align: center;"><b>“The Next Step: Success After the Program”</b></p> <p style="text-align: center;">Diva Whalen Graduate Student Meharry Medical College UMMC – HBCU: Prostate Cancer Research Training Program Class of 2014</p> <p style="text-align: center;">Introduction by Jinghe Mao, Ph.D., Professor of Biology, Tougaloo College. Undergraduate Faculty Advisor UMMC – HBCU: Prostate Cancer Research Training Program</p>
11:40AM – 11:45AM	Discussion

11:45AM – 12:00PM

**SPECIAL LECTURE**

**“Undergraduate Training for Biomedical Research at Tougaloo College”**

Jinghe Mao, Ph.D., Professor of Biology, Tougaloo College.  
Undergraduate Faculty Advisor UMMC – HBCU: Prostate Cancer Research Training Program

Introduction by Roy J. Duhé Ph.D., Professor, Department of Pharmacology and Toxicology,  
Associate Director for Cancer Education, UMMC – Cancer Institute. Member Advisory Committee  
UMMC – HBCU: Prostate Cancer Research Training Program

12:00PM – 12:05PM                      Discussion

12:05PM – 12:10PM

**CLOSING REMARKS**

Christian Gomez, Ph.D. Principal Investigator UMMC – HBCU: Prostate Cancer Research Training  
Program

12:10PM – 1:00PM

**BOX LUNCH**

## **Appendix #6: 2016 Prostate Cancer Research Mini Symposium Pictures**

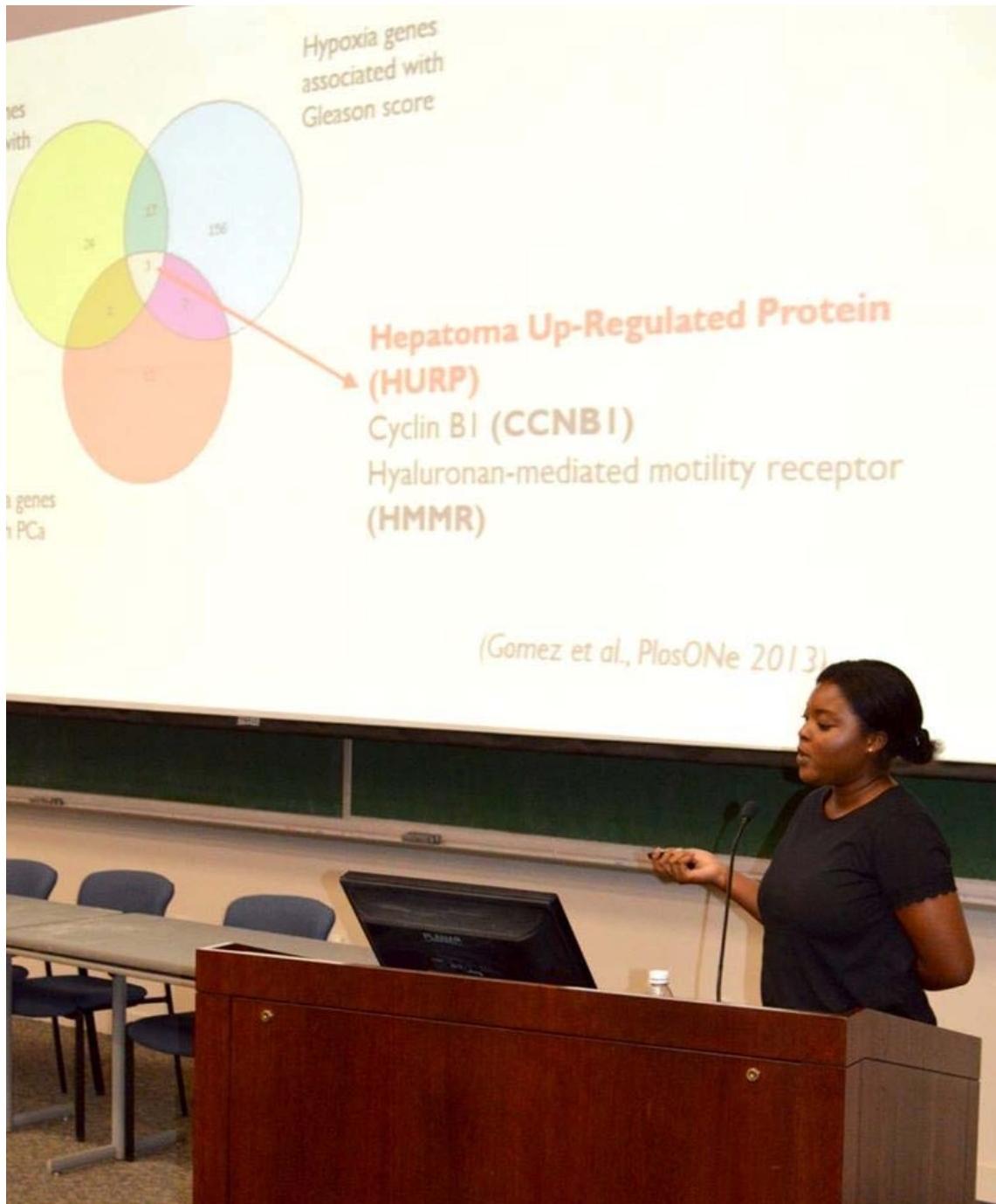
Speakers: Timothy Turner, Ph.D., Ornella Amoah (Class of 2016), Christian Gomez, Ph.D. (Program Director), Courtney Mangum (Class of 2016), Diva Whalen, M.S. (Class of 2014), Jinghe Mao, Ph.D., and Keli Xu, Ph.D.



Roy Duhe, Ph.D. (UMMC-Cancer Institute Associate Director of Cancer Education and UMMC-HBCU PCa Training Program advisory board member), Christian Gomez, Ph.D., (Program Director), Speakers: Jinghe Mao, Ph.D., Courtney Mangum (Class of 2016), Ornella Amoah (Class of 2016) and Srinivasan Vijayakumar, M.D.



Ornella Amoah (Class of 2016) presenting at 2016 Prostate Cancer Research Mini Symposium



**Appendix #7: Summer Undergraduate Students Program for 2016**

**School of Graduate Studies in the Health Sciences**

**DISCOVERY U**

**Summer Research Seminar Schedule**

**2016**

**June 3 (Safety Seminar—Room R153)**

**June 10 (Upper Amphitheater—Room R354)**  
Dr. Sean Didion (MD/PhD Program)

**June 17 (Upper Amphitheater—Room R354)**  
Dr. Jan Williams (Pharmacology Program)

**June 24 (Upper Amphitheater—Room R354)**  
Dr. Maureen Wirschell (Biochemistry Program)

**July 1 (Lower Amphitheater—Room R153)**  
Dr. Michael Ryan (Physiology Program)

**July 8 (Upper Amphitheater—Room R354)**  
Dr. Donna Platt (Neuroscience Program)

**July 15 (Upper Amphitheater—Room R354)**  
Dr. Ryan Darling (Clinical Anatomy Program)

**July 22 (Upper Amphitheater—Room R354)**  
Dr. Stephen Stray (Microbiology and Immunology)

**July 29 (Upper Amphitheater—Room R354)**  
Dr. Amol Janorkar (Biomedical Materials Science Program)

**August 5 Symposium—(Student Union)**

## **Summer Students Activities 2016**

**SAFETY SEMINAR  
June 3, 2016  
R153 Lower Amphitheater**

Name: **Amanda Kinslow**  
Title: **IACUC Training Coordinator**  
Department: **Pathology, LAF (Laboratory Animal Facility)**  
Topics: **Rules and Regulations governing the Privilege of Using Live Animals in Research**  
Time needed: **10-15 minutes**

Name: **Yolanda Griffin**  
Title: **Biological Safety Officer**  
Department: **Environmental Health and Safety**  
Topics: **Blood Borne Pathogens, Hazardous Material and Lab Safety**  
Time needed: **15 minutes**

Name: **Jeff Pinter**  
Title: **Fire Safety Specialist**  
Department: **Environmental Health and Safety**  
Topics: **General Safety, Fire safety procedures and Use of Fire Extinguishers**  
Time needed: **15 minutes**

Name: **Dale Tallman**  
Title: **Safety Officer, Radiation/Laser**  
Department: **Environmental Health and Safety**  
Topics: **Radiation Safety and Laser Safety**  
Time needed: **15 minutes**

SURE social activities program



## Appendix #8: Summer Research Symposium 2016

### POSTER PRESENTATIONS (cont.)

**31. Rachel Pearson**  
Microbiology - Larry McDaniel

**32. Alyssa Pennington**  
Pharmacology - Jan Williams

**33. Jaren Reeves-Darby**  
Neuroscience - Donna Platt

**34. Austin Slone**  
Neuroscience - James Rowlett

**35. Jesse Smith**  
Neuroscience - Ray Grill

**36. Evan Theilman**  
BMS - Jason Griggs

**37. Adam Travis**  
BMS - Amol Janorkar

**38. Olivia Travis**  
Pharmacology - Richard Roman

**39. Emily Turbeville**  
Neuroscience - Lir Wan Fan

**40. Amanda Williams**  
Pharmacology - Jenny Sasser

**41. London Williams**  
Physiology - Eric George

### REMEMBER TO APPLY FOR OUR PROGRAMS IN:

#### PhD Degrees

Biochemistry  
Biomedical Materials Science  
Clinical Anatomy  
Medical Pharmacology  
Microbiology and Immunology  
Neuroscience  
Nursing  
Pathology  
Physiology and Biophysics

#### MS Degrees

Biomedical Materials Science  
Biomedical Sciences  
Clinical Anatomy  
Clinical Investigation  
Pathology

Please visit our webpage: [www.umc.edu/graduateschool/](http://www.umc.edu/graduateschool/)

A very special thank you to all of the mentors, postdocs  
and graduate students who guided  
the summer undergraduate researchers  
during the summer of 2016.



**SUMMER UNDERGRADUATE RESEARCH SYMPOSIUM**  
**August 5, 2016**

**Program Director.....**.....Dr. Mike Ryan  
**Program Administrators.....**.....Mary Canterbury and Dorothea Staursky

9:00 - 9:30      **BREAKFAST RECEPTION**  
 Student Union Conference Center

9:30 - 12:00      **ORAL PRESENTATIONS**

<b>1. Nathan Campbell</b> Pharmacology - Babbette LaMarca	<b>9. Douglas Campbell</b> Microbiology - Stephen Stray
<b>2. Nick Bohannon</b> Physiology - Barbara Alexander	<b>10. Courtney Mangum</b> Cancer Institute - Keli Xu
<b>3. Stephanie Njemaneze</b> Biochemistry - Damian Romero	<b>11. Amanda Blackwell</b> Neuroscience - James Shaffery
<b>4. Olivia Travis</b> Pharmacology - Richard Roman	<b>12. Rachel Pearson</b> Microbiology - Larry McDaniel
<b>5. Ashley Max</b> BMS - Michael Roach	<b>13. Sam Palmer</b> Clinical Anatomy - Dongmei Cui
<b>6. Chelsea Luckett</b> Physiology - Ji Li	<b>14. Jaren Reeves-Darby</b> Neuroscience - Donna Platt
<b>7. Evan Theilman</b> BMS - Jason Griggs	<b>15. Liam Armstrong</b> Pathology - Xiu Liu
<b>8. Ornella Amaoh</b> Cancer Institute - Christian Gomez	

12:00 - 1:00      **LUNCHEON**  
**By Invitation Only** - Student Union Conference Center

1:00 - 2:30      **POSTER PRESENTATIONS/DESSERT RECEPTION**  
 Student Union Conference Center

- |  |   |
|--|---|
| <b>1. Ornella Amaoh</b><br>Cancer Institute - Christian Gomez    | <b>16. Briana Fizer</b><br>Pharmacology - Jan Williams          |
| <b>2. Nandini Aravindan</b><br>Neuroscience - Bernadette Grayson | <b>17. Ashley Gnam</b><br>Pharmacology - Denise Cornelius       |
| <b>3. Liam Armstrong</b><br>Pathology - Xiu Liu                  | <b>18. Alex Griggs</b><br>Physiology - David Stec               |
| <b>4. Amanda Blackwell</b><br>Neuroscience - James Shaffery      | <b>19. Yang He</b><br>Microbiology - Melanie Wilson             |
| <b>5. Nick Bohannon</b><br>Physiology - Barbara Alexander        | <b>20. Bo Key</b><br>BMS - Jason Griggs                         |
| <b>6. Parker Brewster</b><br>Radiology - Andrew Smith            | <b>21. Mark Lewis</b><br>Pharmacology - Elise Gomez-Sanchez     |
| <b>7. Nathan Campbell</b><br>Pharmacology - Babbette LaMarca     | <b>22. Simone Lewis</b><br>Neuroscience - Paul May/Susan Warren |
| <b>8. Douglas Campbell</b><br>Microbiology - Stephen Stray       | <b>23. Chelsea Luckett</b><br>Physiology - Ji Li                |
| <b>9. Julius Chembo</b><br>Physiology - Mike Ryan                | <b>24. Courtney Mangum</b><br>Cancer Institute - Keli Xu        |
| <b>10. Lan Chen</b><br>Neuroscience - Hong Zhu                   | <b>25. Ashley Max</b><br>BMS - Michael Roach                    |
| <b>11. Josh Cotton</b><br>Pharmacology - Sydney Murphy           | <b>26. Destiny Mitchell</b><br>Physiology - Romain Harmancey    |
| <b>12. Anthony Covacevich</b><br>Pathology - Xiu Liu             | <b>27. Henry Nguyen</b><br>Microbiology - Ritesh Tandon         |
| <b>13. Charles Davis</b><br>Microbiology - Mary Marquart         | <b>28. Stephanie Njemaneze</b><br>Biochemistry - Damian Romero  |
| <b>14. Braxton Dupuy</b><br>Neuroscience - Lique Coolen          | <b>29. Sam Palmer</b><br>Clinical Anatomy - Dongmei Cui         |
| <b>15. Shelley Rae Edwards</b><br>Neuroscience - Kevin Freeman   | <b>30. Jamie Paul</b><br>Neuroscience - Courtney Bagge          |

Ornella Amoah poster presentation at Summer Undergraduate Research Symposium 2016



## **Appendix #9 Final papers 2016**

# **Identifying Progression of Aggressive Prostate Cancer Originating from Lunatic Fringe/Notch-Regulated Mice Models**

Courtney Mangum<sup>1</sup>, Wen-Cheng Chung<sup>2</sup>, Keli Xu<sup>2,3</sup>

<sup>1</sup>Biology Department, Tougaloo College, Tougaloo, MS; <sup>2</sup>Cancer Institute, University of Mississippi Medical Center, Jackson, MS; <sup>3</sup>Department of Neurobiology and Anatomical Sciences, University of Mississippi Medical Center, Jackson, MS

Lunatic Fringe (Lfng), a Notch modulator, plays a tumor-suppressive role in the prostate. Loss of Lfng causes expansion of stem-like cells in the prostate basal epithelium and increased cell proliferation, which in turn results in prostatic intraepithelial neoplasia (PIN), abnormal morphological structures of epithelial cells. PIN may turn into an aggressive form of prostate cancer (PCa) via epithelial-mesenchymal transition (EMT). EMT is characterized by an up-regulation of mesenchymal marker, Vimentin and down-regulation of epithelial marker, E-Cadherin. Using Probasin-Cre4, we have genetically engineered mice models (GEMMs) with Lfng deletion in combination with the deletion of tumor suppressive p53 or activation of oncogenic Kras. Prior experiments have shown accelerated PIN development in these models; therefore, we hypothesize that Lfng deletion in combination with p53 deletion or Kras activation will accelerate EMT development in GEMMs. After breeding and genotyping, we isolated and dissected prostate tissue from mice with experimental genotypes Pb-Cre4/Lfng/Kras and Pb-Cre4/Lfng/p53, and control genotypes Pb-Cre4/Lfng and Lfng/p53. The Western blot results showed an intense up-regulation of Vimentin and a modest up-regulation in the E-Cadherin expression in the Pb-Cre4/Lfng/p53 mice model, which may suggest EMT in addition to increased epithelial proliferation. However in opposition to our hypothesis, the Pb-Cre4/Lfng/Kras mice model resulted in up-regulated E-cadherin and down-regulated Vimentin expressions. This does not suggest EMT in this model. Due to the timeliness of mice breeding and prostate cancer progression, more studies will be needed to test for the mechanisms underlying PCa progression in the Lfng/Notch-regulated GEMMs. These preliminary results may show that different pathways are used during pathogenesis of aggressive forms of PCa.

**Financial Support:** Start-up funds from the UMMC Cancer Institute, The University of Mississippi Medical Center, HBCU Summer Research Training Program and the Gomez lab. **Financial Support:** PC131783 (HBCU-UMMC PCRP).

# Effects of Hypoxia on the Aggressiveness of PCa

Ornella Amoah<sup>1</sup>, Ingrid Espinoza<sup>2,3</sup>, Hamza Patel<sup>4</sup>, Christian Gomez<sup>2,3,5</sup>

<sup>1</sup>Department of Chemistry, Jackson State University, Jackson, MS, <sup>2</sup>Cancer Institute, University of Mississippi Medical Center, Jackson, MS, <sup>3</sup>Department of Biochemistry, Mississippi Medical Center, Jackson, MS, <sup>4</sup>Vanderbilt University, Nashville, TN, <sup>5</sup>Department of Pathology and Radiation Oncology, Mississippi Medical Center, Jackson, MS

Tumor hypoxia results from insufficient supply of oxygen to certain areas of the tissue and has been linked to malignant progression, metastasis, resistance to therapy, and poor clinical outcome of cancers in recent publications. In prostate tumor cells, evidence has been shown that the tissue cells thrive in moderately hypoxic conditions. Hypoxia may very well exist in both benign and malignant prostate cells.

The expression of hypoxia-controlled proteins is associated with aggressiveness of prostate cancer. LNCaP cells overexpressed with HURP and their derived cell lines C4-2B, a more progressed form of PCa, were utilized in our experiments. Our objective is to establish a correlation between tumor hypoxia and aggressiveness of prostate cancer through the observation of intensity of hypoxia-associated molecules (HURP and HIF-1 $\alpha$ ) in prostate tumors and cancer cell lines. To test our hypothesis we used in-vitro cell lines and patient derived immunostaining.

Two forms of hypoxia treatment were used during the course of this experiment, incubation at 37°C in humidified air enriched 5% CO<sub>2</sub> with 2% O<sub>2</sub> content and cell exposure to Cobalt (II) Chloride. We used 8%-12% SDS-PAGE gels and Western blot analysis to detect the expression of our proteins: hypoxia- inducible factor-1 (HIF-1 $\alpha$ ), to show the up-regulation of hypoxia in the tumor, hepatoma upregulated protein (HURP) as a predictive marker for aggressive PCa, Beta-actin and GAPDH as loading internal controls. We utilized LNCaP cells overexpressed with HURP and their derived cell lines C4-2B, more progressed forms of PCa. The Gomez lab has published evidence demonstration HURP as an independent biomarker for aggressive PCa, these findings allowed us to use HURP as a marker. The PCa patient tissue immunostaining was done in the lab and scored by a pathologist. 0 being low grade and 3 being high grade cancer.

Thirty-four PCa patient malignant tumors were analyzed after immunostaining for HIF-1 $\alpha$  and Gleason scores were obtained. We found a trend in our analysis which showed an increased HIF-1 $\alpha$  staining, in many cases, had an increase in Gleason score as well. More patient data should be collected to illustrate these results at higher values. The LNCaP and C4-2B treated with CoCl<sub>2</sub> clearly showed a consistent up-regulation of HIF-1 $\alpha$ , however we were not able to analyze for HURP in these lines. HURP and HIF-1 $\alpha$  expression is up- regulated under hypoxia incubation as well.

**Financial Support: PC131783 (HBCU-UMMC PCRP)**

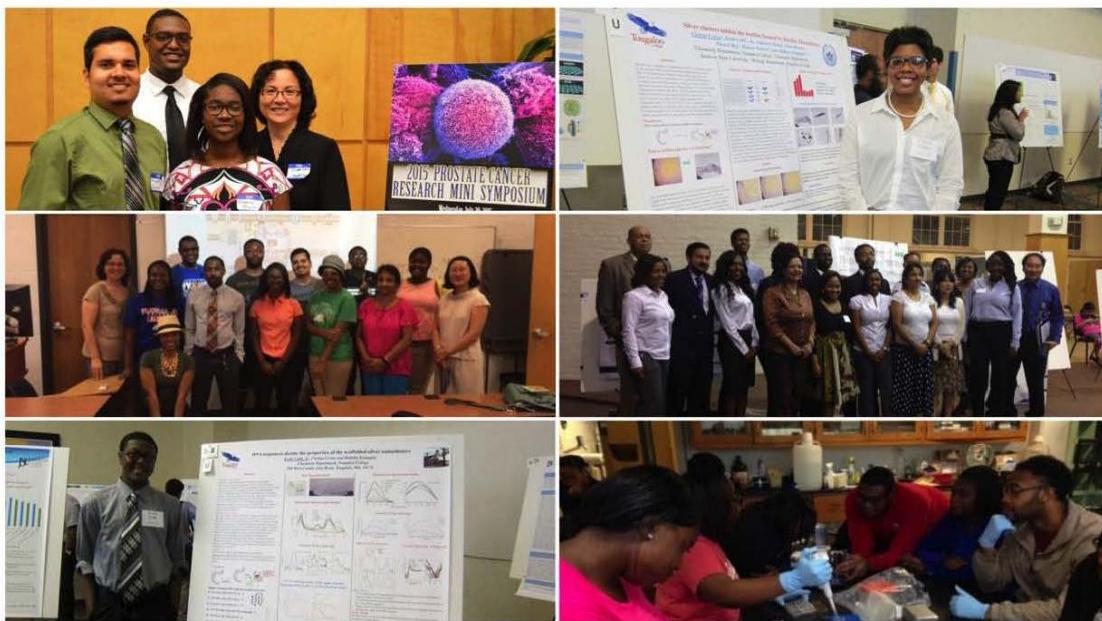
**Appendix #10: 2015 14<sup>th</sup> TC Research Day**

# **14th Research Symposium on Students' Summer Research Series**

**Natural Science Division  
Tougaloo College**

**Tougaloo, MS 39174  
October 16 – 17, 2015**

**2015  
Abstracts**



**Sponsored by: HHMI/Kincheloe Society**

**2015 14<sup>th</sup> TC Research Day Program ctd. (HCBU trainees highlighted in blue)**

**Poster Demonstrations  
Kincheloe Hall  
October 16th 2015  
10:00-11:00 AM; 12:00-1:00 PM**

Page	Name	Major	Research Institution
1	Waynesha E. Blaylock	Biology	U.T. MD Anderson Cancer Center, Houston, Texas
2	Nateasha Carter	Biology	University of Texas Southwestern Medical Center
3	Dominique Clark	Biology	Mississippi State University,
4	Keith Cobb	Biology	Tougaloo College
5	Acacia Cooper	Biology	Virginia Tech
6	Christa Corley	Biology	Tougaloo College
7	Karien Dixon	Chemistry	St. Jude Children's Research Hospital, Memphis
8	Dominique Foster	Biology	Tougaloo College
9	Angel Garcia	Biology	University of Mississippi Medical Center
10	Kelli Gutter	Biology	University of Mississippi Medical Center
11	Brandon Hackett	Biology	Tougaloo College
12	Trianna Humphrey	Biology	University of Mississippi Medical Center
13	Aswad Jackson	Biology	University at Buffalo
14	Sharrall Jenkins	Biology	Brown University
15	Tembra Jones	Biology	Base pair Program, University of Mississippi Medical Center
16	Jessica McKenzie	Biology	University of Mississippi Medical Center
17	Le'Andrea Mitchell	Biology	MS State Dept. of Health
18	Josiah Moore	Chemistry	University of Alabama, Tuscaloosa
19	Kendrique Morgan	Biology	University at Buffalo
20	Maria Muhammad	Chemistry	University of Mississippi Medical Center
21	Charles Phillips	Biology	University of Mississippi Medical Center
22	Courtney Sims	Chemistry	University of Mississippi Medical Center
23	Shantasia Thomas	Biology	Case Western Reserve

**2015 14<sup>th</sup> TC Research Day Program ctd. (HCBU trainees highlighted in blue)**

			University
24	Alexandria Thompson	Biology	Tougaloo College
25	Corey Walters	Chemistry	University of Mississippi
26	Aurora Washington	Biology	Brown University
27	Maurice Whalen	Biology	Brown University
28	Shenequa Wilson	Biology	University of Mississippi
37	Raqueema Williams	Biology	Tougaloo College

**Oral Presentations  
 Kincheloe 106 Lecture Room  
 October 17th 2015  
 8:30-11:30 AM**

Page	Name	Major	Research Institutions
29	Timera Brown	Biology	University of Mississippi Medical Center
30	Michael Cleveland	Biology	Community Liaison DeKalb County Board of Health
31	Breland Crudup	Biology	Brigham and Women's Hospital
32	Kembe Keys	Chemistry	SMDEP, Ohio
33	Courtney Mangum	Biology	State University of NY, Buffalo
34	Angelyn Martin	Biology	Mississippi State University
35	Jonathan Moore	Biology	Brown University
36	Jonathan Taylor	Math and Computer Science	Engineer Research and Development Center-Information Technology Lab

## Appendix #11: Awards

Anthony Keyes poster presentation award at ABRCMS 2015



# Anthony Keyes acceptance letter for REU Summer Program in University of Illinois

## UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

### Department of Chemistry

School of Chemical Sciences  
463 Roger Adams Laboratory, Box 48, MC-712  
600 South Mathews Avenue  
Urbana, IL 61801



March 6, 2015

Anthony Keyes  
1314 Diamond Rim Drive  
Colorado Springs, CO 80921

Dear Mr. Keyes:

Congratulations on your selection to participate in the Illinois Research Experience for Undergraduates (REU) program, sponsored by the U.S. National Science Foundation and the 3M Foundation. If you accept, you will be doing research with Dr. Paul Hergenrother, [hergenro@illinois.edu](mailto:hergenro@illinois.edu). You will also participate in a variety of educational and social activities with other REU attendees.

The REU program offers housing in Urbana, reimbursement of your travel expenses to Urbana (coach-class round trip or mileage if you drive), \$800 for living expenses and a \$5,000 stipend, the payment of which will be paid in 3 installments on or around 6/1, 7/1, 8/7. Taxes will not be withheld from this stipend and this income is reportable to taxing agencies. Housing will be at Europa House (<http://www.europa-house.org/>) a few blocks from Chemistry. Chemistry pays for this housing directly, so extraordinary circumstances are required to justify alternative housing arrangements.

If you accept our offer, we ask that you arrive in Urbana on Sunday, May 31, 2015, and start the program on Monday, June 1, 2015. The program concludes on Friday, August 7, 2015, with check-out on August 8, 2015. The program will last for a total of ten weeks. In order to facilitate the stipend arrangements, Staci Ryan ([staciry@illinois.edu](mailto:staciry@illinois.edu), 217-244-0565), will contact you regarding the process. Please also confirm your start date with her. We recognize that not all schools are done for the year in late May; while we cannot extend the completion of the program past August 7, we can be flexible on the start date.

Ms. Ryan will be contacting you again soon with more information on the program details, additional paperwork that will need to be completed for you to register for the course associated with this REU program (at no cost to you) and research project assignments. **Please let us know by Monday, March 9 if you accept this offer.** If you have already accepted another position for the summer, please let us know as soon as you can so that we may offer your spot to another applicant.

For your travel here and back, there is a simple and economical procedure. If you will be flying to Urbana-Champaign, we will issue the ticket for you with the help of our agents at Suzi Davis Travel. If you will be driving to Urbana-Champaign, please note the mileage for your trip here so we can process a reimbursement request for you upon your arrival.

Finally, because the REU funders maintain a keen interest in the summer scholars, I ask that you prepare a brief account (one to two pages in length) before your departure describing your personal and educational background, your interests and plans for the future and, in general terms, a brief report on the project you undertook over the summer. You will also present a poster on your research during the last week of the program, and a PDF of that poster should be turned in before you leave Urbana.

Once again, congratulations, and I look forward to hearing your decision about this offer by **Monday, March 9, 2015.**

Sincerely,

Alexander Scheeline  
Professor of Chemistry Emeritus

telephone 217-333-2999 • fax 217-265-6290  
email [scheelin@scs.illinois.edu](mailto:scheelin@scs.illinois.edu) • url [http://www.chemistry.illinois.edu/faculty/Alexander\\_Scheeline.html](http://www.chemistry.illinois.edu/faculty/Alexander_Scheeline.html)

Anthony Keyes research experience in Chemistry Laboratory of Organic Polymers

(<http://www.u-bordeaux.com/Education/Exchange-Programs/Incoming-international-students-in-Bordeaux>)

The screenshot shows a section of the University of Bordeaux website. At the top, there is a navigation bar with links for 'Education', 'Research', and 'Welcome to Bordeaux'. Below the navigation bar, a blue banner features the text 'Rashid Chatani at LIRYC: click to discover his portrait'. The main content area contains a large, stylized logo consisting of a dark 'U' and a light blue 'B'. To the right of the logo, the text '*...a great experience... conducting cutting-edge research. »*' is displayed in a blue, italicized font. Below this, another blue banner features the text 'Anthony Keyes at LCPO: click to discover his portrait'. Underneath these banners, there is a block of text describing Anthony Keyes' research experience:

**Anthony Keyes (Jackson State University) / Host laboratory: LCPO\* under the supervision of Olivier Sandre**

"The reason that I have come to Bordeaux is to do **quality research**. I will be working on optimizing the polyol synthesis, a popular method to produce metal nanoparticles. I will be focusing specifically on producing iron oxide nanoparticles, which can be used as MRI contrast agents and even therapeutic agents for cancer. I hope that during my stay here in Bordeaux, I will be able to produce results that impact the further synthesis of iron oxide nanoparticles.

The main aim of my visit is to dedicate myself to my research and to enjoy my time working in the laboratory. So far, I have discovered **many bright minds within the university** and I have made a few friends. Being so far from my home country is relaxing and allows me to focus entirely on my personal growth. At the end of the program, I hope I will make many scientific connections and, most importantly, enjoy my stay in France".

\* Chemistry Laboratory of Organic Polymers

Angel Garcia award at Tougaloo College Undergraduate Research Symposium





## Angel Garcia acceptance letter for iSEED Summer Research Experience program at the University at Buffalo

The screenshot shows a Yahoo Mail inbox with several tabs at the top: 'ela...' (unread), '(13021 unread) - gabriela...', 'Prostate Cancer Research ...', 'G national pan-hellenic cou...', and a '+' sign. Below the tabs is a search bar and a navigation bar with links to 'Search', 'News', 'Sports', 'Finance', 'Celebrity', 'Weather', 'Answers', 'Flickr', 'Mobile', and 'More'. The main area displays an email from 'iSEED <iseed@buffalo.edu>' to 'Baum, Jackie Lou' dated 'Apr 5 at 3:55 PM'. The subject of the email is 'UB iSEED Summer Research Experience: Travel and Housing Information (4)'. The email body starts with 'Dear 2016 iSEED Students:' and congratulates them on acceptance. It informs them that the official program runs from May 31st to August 5th. The text then asks for travel and housing information, noting that students will arrive on May 31st and depart on August 6th. It provides a link for filling out transportation details: <https://docs.google.com/spreadsheets/viewform?formkey=dGZuQnJBY3dKVUJCa2NGMGIZUF81dEE6MQ#gid=0>. It also mentions that students within 3-4 hours of Buffalo are likely to arrive by car.

UB iSEED Summer Research Experience: Travel and Housing Information (4)

iSEED <iseed@buffalo.edu> Apr 5 at 3:55 PM

To Baum, Jackie Lou

Dear 2016 iSEED Students:

Congratulations again on your acceptance to the iSEED Summer Research Experience at the University at Buffalo. As you know, the official program will run from May 31st (arrival day) to August 5th (departure).

We know that you will all be coming to UB from near and far, and so in advance of the program, we'd like to ask you for a few bits of important information that will help us arrange and plan for your travel to Buffalo. Please visit the link below as soon as possible, but no later than Wednesday April 13th so that we can make your arrangements. Please fill out any applicable questions even if you are a local student who will be living off campus this summer.

<https://docs.google.com/spreadsheets/viewform?formkey=dGZuQnJBY3dKVUJCa2NGMGIZUF81dEE6MQ#gid=0>

**Regarding transportation:** For those of you flying to Buffalo, we ask that you arrive on Tuesday May 31st, and depart on Saturday August 6th (unless otherwise discussed with us). We will book your flights to Buffalo for the morning or early afternoon on May 31st. Students within 3-4 hours of Buffalo are likely to arrive by car- and if possible we ask that you arrive on Tuesday May 31st in the afternoon.

## Jamal Keyes acceptance letter to REU-CB at Rutgers



February 10, 2016

Dear Jamal,

Congratulations! We are delighted to accept you to our 2016 summer research program, **RiSE** (Research in Science and Engineering) at Rutgers through the NSF **Research Experience for Undergraduates in Cellular Bioengineering (REU-CB)**. You should feel very proud of yourself -admission is highly selective. We are impressed with your credentials and expect that you will have a rewarding, exciting, and enjoyable summer.

Please let us know no later than, **February 24, 2016 by 9:00 AM**, if you accept our offer by completing the form in the body of our e-mail and replying to: [rise@rci.rutgers.edu](mailto:rise@rci.rutgers.edu).

Please note:

- You will be matched with one of the Cellular Bioengineering faculty mentors. On our application, you specified your research interests and may have answered an optional question to indicate prospective faculty mentors. We will use the information from your application as a guide to your placement. If you wish to update that information, please do so in your reply form. Every effort will be made to match you with one of your preferred choices.
- You will receive a generous stipend of \$5,000 for 10 weeks. We also provide a preparatory course for the GRE (valued at \$900), free housing in on-campus apartments, and travel reimbursement up to \$500.
- RiSE/REU-CB dates are May 31 to August 5, 2016. Housing check-in will be Sunday, May 29, 2016. (Anything later is by special arrangement only).

Once you accept our offer, you are expected to withdraw applications from any other summer opportunities.

Participation in RiSE is a full-time commitment. Therefore, you should not plan to take courses or accept additional employment while in the program.

As a RiSE Scholar, you will be eligible for our prestigious SUMmer Pipeline to Excellence at Rutgers Graduate (SUPER Grad) fellowship program if you return to Rutgers for graduate study. Learn more [here](#).

If you have any questions, do not hesitate to contact us at 848-932-6584 or [rise@rci.rutgers.edu](mailto:rise@rci.rutgers.edu). We are confident you will have a great summer and are excited at the prospect of welcoming you to Rutgers!

Sincerely,

A handwritten signature in black ink that appears to read "David Shreiber".

Director, NSF REU in Cellular Bioengineering: From Biomaterials to Stem Cells  
[Shreiber@rci.rutgers.edu](mailto:Shreiber@rci.rutgers.edu)

A handwritten signature in black ink that appears to read "Evelyn S. Erenrich".

Evelyn S. Erenrich, Ph.D.  
Director, RiSE at Rutgers  
[Erenrich@rutgers.edu](mailto:Erenrich@rutgers.edu)



# Timera Brown acceptance letter to VINSE Summer REU Program at Vanderbilt University



**VANDERBILT  
UNIVERSITY**

*Vanderbilt Institute of Nanoscale Science and Engineering*

---

February 18, 2016

Timera Brown  
P.O. Box 477  
Richton, MS 39476-0477

Dear Timera:

I am pleased to inform you that you have been accepted as a summer research intern in the Vanderbilt Institute for Nanoscale Science and Engineering (VINSE) NSF funded summer REU program.

Participants in the ten-week program will receive a \$5,000 stipend, campus housing at no additional cost, a meal allowance, and up to \$500 to cover the cost of travel to and from Nashville. Scientifically, participation in the program will provide you with a true interdisciplinary research experience in an environment where physicists, chemists, biologists, and all engineers collaboratively solve problems and create new scientific understanding. You will work directly with VINSE faculty members and their research groups and have access to the state-of-the-art VINSE laboratories, which are shared facilities available to all authorized users. The 10 week program will also feature weekly informal seminars, workshops, field trips and a final banquet and poster competition, at which you will have the opportunity to compete with your fellow interns for travel funds to present at a national conference, such as the American Chemical Society annual meeting.

Vanderbilt represents one of the most exciting academic environments in the United States. We are ranked #15 in the US News and World Report rankings, and despite our small size (~6800 undergraduates and ~6000 graduate and professional students) Vanderbilt is ranked in the top 25 in total U.S. federal funding. We are one of only 13 universities that rank in the top 25 in both of these categories, which is quite an achievement. The Vanderbilt campus itself is centrally located in Nashville, being just one mile from downtown, which is one of the most vibrant and cosmopolitan mid-sized cities in the United States. So we think you will really enjoy your time on our campus!

These awards are highly competitive and so you are in a select group chosen to receive this award. There are, however, several qualified alternates and so we would appreciate it if you would notify us of your decision of acceptance as soon as possible and no later than February 25, 2016.

We look forward to your participation in this exciting research program and joining the team of faculty, researchers and graduate students exploring the frontiers of nanoscale science and engineering.

Sincerely,

A handwritten signature in black ink, appearing to read 'Clare McCabe'.

Clare McCabe  
Director, Vanderbilt REU Program in Nanosciences,  
Professor of Chemical and Biomolecular Engineering,  
Professor of Chemistry

## Appendix #12: Acceptance into Graduate Programs

Charles Phillips acceptance letter for UMMC Graduate School in Pathology



School of Graduate Studies  
in the Health Sciences  
2500 North State Street  
Jackson, Mississippi 39216-4505  
Phone (601) 984-1195  
Fax (601) 815-9440

April 25, 2016

Charles Phillips  
1212 CR 153  
Coila, MS 38923

Dear Charles,

We are pleased to inform you that you have been accepted into the School of Graduate Studies in the Health Sciences (SGSHS) at the University of Mississippi Medical Center for the fall semester beginning August 2016.

You have been awarded a graduate research stipend that provides both individual health insurance and a stipend of approximately \$24,000/year. **Please note: Stipends are not tax exempt.**

You have also been selected to receive the Dean's Scholarship for the School of Graduate Studies in the Health Sciences. This scholarship pays tuition costs for up to five years of your graduate education. The Office of Student Financial Aid will contact you regarding the next step in the process.

**To confirm your acceptance, the attached letter of intent must be returned to the SGSHS office by email to [smoulds@umc.edu](mailto:smoulds@umc.edu) or fax to 601-815-9440 within two weeks of the date of this letter.**

Acceptance to the School of Graduate Studies is conditional; the Admission Committee may rescind an offer of acceptance if an applicant fails to maintain expectations upon which the acceptance was based. Examples include, but are not limited to, failure to complete prerequisites or other course work and degrees in progress, patterns of unprofessional behavior, and incidents discovered in a criminal background check.

We welcome you to the University of Mississippi Medical Center and look forward to meeting you in the near future. **If you have questions prior to your arrival on campus, please contact the director of your graduate program [dgrzybicki@umc.edu](mailto:dgrzybicki@umc.edu) or the Office of the Dean of the School of Graduate Studies in the Health Sciences (Email: [smoulds@umc.edu](mailto:smoulds@umc.edu) or phone: 601-984-1632).**

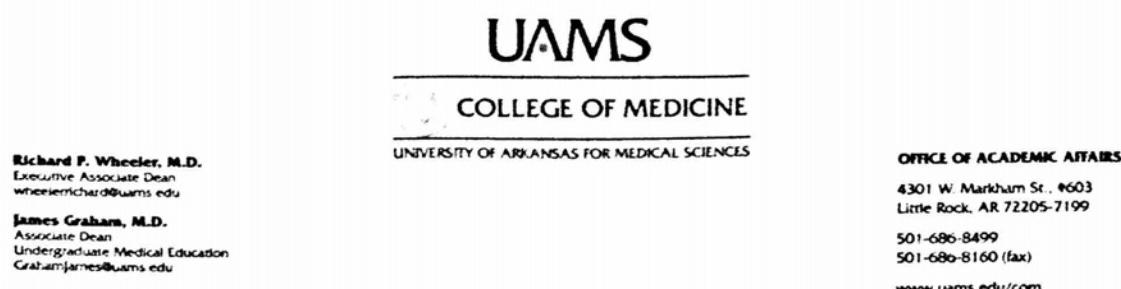
Sincerely,

Sydney Murphy, Ph.D.  
Assistant Dean, School of Graduate Studies in the Health Sciences

Cc: Debbie Saxon, Director of Budget and Institutional Resources  
Carrie Cooper, Director of Student Financial Aid  
Dr. Dana Grzybicki, Program Director, Pathology

## Appendix #13: Acceptance into School of Medicine

Ansley Scott acceptance letter for UAMS College of Medicine.



February 25, 2016

Ansley Scott  
1634 Hawthorne Cove  
Byram, MS 39272

Dear Ansley:

I take great pleasure in offering you a position in the 2016-17 entering Freshman medical class.

You are to be commended for superior performance during your premedical years. In fairness to applicants who will not be selected, we reserve the right to review your subsequent academic performance, since a deterioration of work may necessitate reconsideration of your acceptance. In particular, failure to complete your pre-matriculation requirements prior to enrollment in August may cause you to be denied admission. The offer of acceptance is contingent upon the completion of a criminal background check with acceptable results. We do not anticipate that reconsideration will be needed and we welcome you to the Class of 2020.

**Please complete and return the enclosed "Acceptance Acknowledgement Form" within two weeks to accept your position in the next freshman medical class.** If you need to discuss pre-matriculation requirements or have other questions, please contact Tom South, Assistant Dean of Admissions, or Jeanne McLachlin, Director of Admissions and Recruitment.

As you may know, there are certain physical and cognitive demands related to medical school. These are described in our "Technical Standards," a copy of which is enclosed. We are committed to reasonably accommodating individuals with disabilities who can, with these accommodations, succeed in completing the medical college curriculum. Our Student Affairs Office is available to discuss any concerns you have about meeting the Technical Standards with or without accommodation. A *Certification of Technical Standards* is enclosed. Please sign and return it with your response to this offer of acceptance.

We are proud of our reputation as a college that emphasizes a superb educational experience for medical students. We know that much of our reputation is due to exceptional students like you. Congratulations on this great success! We are pleased to have you as a member of our student body.

Sincerely,

A handwritten signature in black ink, appearing to read "R.P. Wheeler".

Richard P. Wheeler, M.D.  
Professor of Medicine  
Executive Associate Dean for Academic Affairs

## **Appendix #14: Acceptance into Pharmacy Program**

Tatyana Givens acceptance letter for Pharmacy Program



---

# **COLLEGE OF PHARMACY**

Dear Tatyana:

Congratulations on your acceptance into Mercer's Doctor of Pharmacy Class of 2020!

The first items required to secure your position in the Mercer Doctor of Pharmacy Program are responses to the Enrollment Information form (<http://tinyurl.com/MUPharmD2020>) and a non-refundable deposit of \$500.00 to this office by **February 3, 2016**.

A second \$250 deposit will be due on **May 1, 2016**. Seven hundred and twenty-five dollars of the deposit will be credited toward your first semester's tuition while the remaining \$25 will satisfy the University's matriculation fee.

Additional details regarding your acceptance - including any conditions that the Admissions Committee has placed on your acceptance - are included in the hard copy acceptance letter that is being sent to you. A copy of the New Doctor of Pharmacy Student Enrollment Checklist that includes items that you will need to complete between now and when you enroll in August will be included in the letter packet.

Please let us know if we can assist you with any part of the enrollment process. We look forward to your joining the Mercer community next August!

Best Regards,  
Jordana

*Jordana S. Berry, MBA '04*  
Director of Admissions and Student Affairs  
Mercer University College of Pharmacy  
Direct: 678.547.6182  
Fax: 678.547.6518  
[berry\\_js@mercer.edu](mailto:berry_js@mercer.edu)

## Appendix #15: Scientific meetings attended

ABRCMS 2015 – Adesuwa Ekunwe

The screenshot shows a web page for the ABRCMS 2015 Seattle conference. At the top is a logo for "ABRCMS 2015th ANNIVERSARY seattle NOVEMBER 11-14". On the left, there's a sidebar with links for Advanced Search, Presenter Index, Browse, My Itinerary, and a search bar with "Search Tips", "CLEAR", and "SEARCH" buttons. Below this is a note about adding items to the itinerary. At the top right is a "Quick Links" dropdown. The main content area has a breadcrumb trail: Home > Presenter Index > Search Results > Presentation Detail. The title "Presentation Abstract" is followed by "Add to Itinerary" and "Print" buttons. The abstract details are as follows:

**Session:** Poster Session 7 (G), Saturday, November 14, 11:00 am - 12:15 pm  
Saturday, Nov 14, 2015, 11:00 AM -12:15 PM

**Presentation Title:** G060 - Generation of MTA1 Transgenic Mouse Model for Studying Prostate Cancer Progression

**Location:** Cancer Biology

**Scientific Discipline:** + 2. Cancer Biology -> a. Cancer Biology

**Education Level:** Undergraduate Sophomore

**Author(s):** Adesuwa O. Ekunwe, Nasi Butt, M.D.; Swati Dhar, Ph.D.; Avinash Kumar, Ph.D.; and Anait S. Levenson, M.D./Ph.D.  
Cancer Institute at the University of Mississippi Medical Center, Jackson, MS

**Abstract:** In the United States, prostate cancer is a major health problem. It is the second leading cause of cancer death in American men. About 1 in every 7 men will be diagnosed with prostate cancer in their lifetime. Efforts have been

## **Appendix #16: Prostate Cancer Knowledge Assessment**

### **Prostate Cancer Knowledge Assessment**

**July 25, 2016**

**YOUR NAME (Please print legibly): \_\_\_\_\_**

#### **MULTIPLE CHOICE SECTION (Circle the BEST answer).**

**1) The majority of men in the U.S.A. diagnosed with prostate cancer in the current era have**

- A) a small chance of being cured with current therapies.**
- B) cancers that are found incidentally on imaging studies done for another reason.**
- C) few to no symptoms to suggest the presence of cancer.**
- D) severe symptoms that lead to the diagnosis of prostate cancer.**
- E) None of the above are correct.**

**2) Which prostate cell type(s) are most likely to be the cells from which prostate cancers originate?**

- A) Basal cells only**
- B) Luminal cells only**
- C) Neuroendocrine cells**
- D) Both basal and luminal cells**
- F) Both basal and neuroendocrine cells**

**3) Which of the following is NOT one of the seven standard medical therapies for treating prostate cancer?**

- A) Hormone therapy**
- B) Magnetic therapy**
- C) Radiation therapy**
- D) Surgery**
- E) Watchful waiting or active surveillance**

4) Which of the following drugs used to treat prostate cancer results in a reduced production of testosterone as a consequence of its primary mechanism of action?

- A) Cabazitaxel
- B) Denosumab
- C) Goserelin
- D) Sipuleucel T
- E) Zoledronic acid

TRUE/FALSE SECTION: Circle TRUE or FALSE for each of the following statements.

5) Processed sugar in the American diet is the primary cause of rising prostate cancer rates.  
(TRUE or FALSE)

6) If he lives long enough, almost every male will develop prostate cancer. (TRUE or FALSE)

7) Human papilloma virus (HPV) causes cervical cancer in females and prostate cancer in males. (TRUE or FALSE)

SHORT ANSWER SECTION: Write the MOST CORRECT short answer in the space provided.

8) Name at least 4 risk factors for prostate cancer:

---

---

9) List at least one of the functions of the prostate gland

---

---

10) Name a prostate cancer biomarker approved by the U.S. Food and Drug Administration.

---

---

Question	Correct Answer	Student 1 6-6-2016	Student 1 7-25-2016	Student 2 6-6-2016	Student 2 7-25-2016	Student 3 6-6-2016	Student 3 7-25-2016	Student 4 6-6-2016	Student 4 7-25-2016	Student 5 6-6-2016	Average pre- course	Average post- course
1	C	0	1	0	0	0	0	1	1	1	1	1
2	D	0	0	1	0	0	1	0	1	1	0	0
3	B	0	1	0	1	0	1	0	1	1	1	1
4	C	1	1	0	0	0	0	0	0	0	0	0
5	FALSE	1	1	1	1	0	1	1	1	1	1	1
6	TRUE	1	1	0	1	0	1	1	1	1	0	0
7	FALSE	1	1	1	1	0	0	0	0	0	1	1
8	Age, Family History, Race, Diet (Acceptable answers: to produce seminal fluid; to produce the substances in semen which maintain healthy sperm. Incorrect answer to produce sperm)	0.5	1	0.5	1	0	1	0.25	1	0	0	0
9		0	1	0	1	0	0	0	0	0	0	0
10	Serum Antigen, Best answer: Prostate Health Index (phi) which combines total PSA, free PSA and [ $\frac{f}{t}$ ]freePSA into a single score.)	0	1	0	1	0	0	0	0	0	0	0
	<b>Final Score</b>	45.00%	90.00%	35.00%	70.00%	0.00%	50.00%	32.50%	60.00%	40.00%	30.50%	67.50%
	<b>Improvement</b>	<b>200%</b>	<b>200%</b>				#DIV/0!			<b>185%</b>		<b>221%</b>

## **Appendix #17: Testimonials students Class of 2016**

### **Courtney Mangum**

courtmangum@gmail.com



**Current status:** Courtney Mangum, from Jackson, Mississippi, is a senior biology major at Tougaloo College. She is currently working on going to medical school upon graduation in 2017. She is proud to be the Vice-President of the National Pre-Alumni Council of the United Negro Fund.

**Mentor:** Dr. Keli Xu

**Project title:** Identifying Progression of Aggressive Prostate Cancer Originating from Lunatic Fringe/Notch-Regulated Mice Models

**Recent accomplishment:** She is a recipient of University at Buffalo School of Medicine and Biomedical Sciences Early Opportunity Program in Medicine, where she will be attending fall 2017. She was

just recently inducted as an Associate Member of the Brown Chapter of Sigma Xi: The Scientific Research Society. She has presented at many research conferences including the Annual Biomedical Research Conference for Minority Students, Emerging Researchers National Conference in STEM, and the 13<sup>th</sup> Tougaloo College Millsaps College Undergraduate Research Symposium.

**Personal statement:** My recent studies have been some of the most valued experiences of my life. The pure essence and quality of the HBCU-UMMC internship is what was valued. Researchers play key role in medicine. Research engages intellectual curiosity and allows for creativity. Working in the field of prostate cancer has opened my mind to different risk factors of this disease, specifically old age and being of African American descent. The lack of preventative treatments baffles me and drove my interest even more. I refuse to be stagnant in my career; researching and becoming a part of the Mississippi Prostate Cancer HBCU Undergraduate Research Training Program equipped me with a broader knowledge of cancer and biology on a molecular level. I am currently seeking a higher education so that I may make the lives of others better.

**Ornella Amoah**

ornellaamaoh@gmail.com



**Current status:** Ornella Amoah is a junior Chemistry major at The Jackson State University. This summer she was able to study hypoxia in relation to prostate cancer with proteins HURP and HIF-1alpha. Ornella is currently the NOBCChE JSU student chapter secretary and the ACS JSU chapter vice president.

**Mentor:** Dr. Christian R. Gomez

**Recent Accomplishments:** Awarded Dean's and President's List for the 2014-2016 school years. Nominated to the Alpha Lambda Delta and National Society of Collegiate Scholars 2015- present.

**Personal statement:** This summer I was able to experience a great deal of laboratory techniques and protocol. I am grateful for being able to participate in the HBCU Prostate Research Training Program because my time in lab and at the lectures educated me to the significance of cancer research. I learned of the disparities between African American men and other races in the US in the rates of new cases and deaths from prostate cancer. African men in the US are not only prone to aggressive forms of the cancer, but because of the lack of medical support in most of theirs communities, they are diagnosed late or are unable to access medical help. My experience this summer has reignited my love for medicine and science and assured me educational path.

## Appendix #18: Social media resources

### Facebook group screenshot

**UMMC – HBCU: Prostate Cancer...**  Department of Defense  
Joined  Notifications ...

**Discussion** Members Events Photos Files Search this group

**PINNED POST**

 **Christian Gomez** updated the description.  
March 27, 2014

The Mississippi Prostate Cancer HBCU Undergraduate Research Training Program is supported by the U.S. Department of Defense Prostate Cancer Research Program. Our goal is to train undergraduate students from two Historically Black Colleges and Universities, Tougaloo College and Jackson State University so they can gain experience in performing prostate cancer research at the University of Mississippi Medical Center Cancer Institute.

1 Visualizado por todos

Curtir Comentar

**RECENT ACTIVITY**

 **Christian Gomez** uploaded a file.  
July 29

Dear friends, we are very excited about the upcoming:  
2016 Prostate Cancer Research Mini Symposium  
Wednesday, August 3, 2016  
8:30 am - 1:00 pm  
University of Mississippi Medical Center... See More

**UMMC-HBCU 2016 Symposium Program 072916.pdf**

**ADD MEMBERS**  
+ Enter name or email address...

**MEMBERS** 14 Members



**DESCRIPTION**  
The Mississippi Prostate Cancer HBCU Undergraduate Research Trai... See More

**GROUP CHATS**  
No group chats, start one now.

+ Start New Chat

**CREATE NEW GROUPS**  
Groups make it easier than ever to share with friends, family and teammates.

Create Group

**RECENT GROUP PHOTOS** See All



**CREATE NEW GROUPS**

## LinkedIN group screenshot

 UMMC – HBCU: Prostate Cancer Research Training  
16 members ✓ Member

 Start a conversation with your group  
Enter a conversation title...

[Conversations](#) [Jobs](#)

 Christian Gomez  
Associate Professor in Pathology and Radiation Full member, Cancer In...  
OWNER

Upcoming Prostate Cancer Research Mini-Symposium!!!  
August 3 - 2016

Dear friends, we are very excited about the upcoming:  
2015 Prostate Cancer Research Mini Symposium  
Wednesday, July 29, 2015  
8:30 am - 12:30 pm  
University of Mississippi Medical Center  
Norman C. Nelson Student Union  
Rooms A & B

Please consider attending our ... [Show more](#)



**ABOUT THIS GROUP**  
The Mississippi Prostate Cancer HBCU Undergraduate Research Training Program is supported by the U.S. Department of Defense Prostate Cancer Research Program.  
Our goal is to train undergraduate students from two Historically Black Colleges and Universi... [Show more](#)

**MEMBERS**  16 members

[Invite others](#)

  
**SUCCESS IS TIAA**  
Find your personal definition of success today. [START NOW](#)